DOCUMENT RESUME

ED 036 904 72 EA 002 798

AUTHOR	Das Gupta, A.K., Ed.; And Others
TITLE	Indian Educational Material, Annotated Quarterly Bibliography. Volume 4, No. 1 (January-March 1969).
INSTITUTION	Indian National Scientific Documentation Centre, Delhi.
SPONS AGENCY	Office of Education (DHEW), Washington, D.C. Bureau of Research.
REPORT NO	TT-69-53002-3
BUREAU NO	BR-7-1275
PUB DATE	Mar 69
NOTE	107p.
EDRS PRICE	EDRS Price MF-$0.50 HC Not Available from EDRS.
DESCRIPTORS	*Abstracts, Academic Achievement, Adult Education, *Annotated Bibliographies, Curriculum, Discipline, *Educational Administration, Educational Planning, *Educational Psychology, Educational Sociology, Higher Education, *Science Education, Special Education, Teacher Education, Teaching Methods, Testing, Vocational Education
IDENTIFIERS	India

ABSTRACT

Abstracts of 159 journal articles, reports, and related items published in India from 1956 to 1969, are arranged under 36 headings, as follows: Academic achievement, administration and organization, adult education, basic education, courses of study (higher education), curriculum, education (general), educational psychology, educational research, educational sociology, examination and evaluation, guidance and counselling, health care, higher education, instructional material and aids, language problem, literacy, physical education, policy and planning, preschool education, primary education, reading, school building, single teacher school, special education, statistics, student indiscipline, student politics, student selection, teacher education, teacher organizations, teachers, teaching methods, tests and measurements, vocational and technical education, and women's education. A special section contains 43 abstracts of similarly published items related to science education. [Not available in hard copy due to marginal legibility of original copy.] (JK)

ED0 36904

TT 69-53002/3

BR 7-1275
PA-72
OE/IIS
EA

INDIAN EDUCATIONAL MATERIAL

[Period Covered : January - March 1969]

Vol 4 No 1

March 1969

INDIAN NATIONAL SCIENTIFIC DOCUMENTATION CENTRE,

DELHI-12

EA 002 798

ED036904

T T 69-53002/3

INDIAN EDUCATIONAL MATERIAL

annotated quarterly bibliography

Vol 4* No 1 March 1969

[Period Covered: January - March 1969]

(Abstract Nos. 1 - 159)

Contains a Special Section

Science Education

(Abstract Nos: A1 - A43)

Editor

A.K. DAS GUPTA

Associate editors

A. JOSEPH
V.N. KUSUMA
R.S. SHEDHA
V. SUJATA

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION
THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL OFFICE OF EDUCATION POSITION OR POLICY.

Assisted by

C.V.N. SWAMY

Compiled and Published for
The Office of Education of the Department of Health,
Education and Welfare in accordance with an agreement
with the National Science Foundation, Washington D.C.,
by the Indian National Scientific Documentation Centre,
Hillside Road, Delhi-12, India.

---

* Issue numbers 1 and 2 complete the Volume 3. A new Volume No. (Vol.4) starts with this issue to conform to the calender year as desired by NSF

CONTENTS

Academic Achievement 1- 8
Administration and Organization 9-20
Adult Education 21-6
Basic Education 27
Courses of Study (Higher Education) 28-37
Curriculum 38-43
Education: General 44-8
Educational Psychology 49-64
Educational Research 65
Educational Sociology 66-71
Examination and Evaluation 72-8
Guidance and Counselling 79-81
Health Care 82
Higher Education 83-7
Instructional Material and Aids 88-91
Language Problem 92-3
Literacy 94
Physical Education 95-6
Policy and Planning 97-103
Preschool Education 104
Primary Education 105
Reading 106
School Building 107
Single Teacher School 108
Special Education 109-12
Statistics 113-14
Student Indiscipline 115-23
Student Politics 124
Student Selection 125
Teacher Education 126-31
Teacher Organizations 132
Teachers 133-5
Teaching Methods 136-42
Tests and Measurements 143-52
Vocational and Technical Education 153-6
Women's Education 157-9

Special Section: Science Education A1-A43

INDIAN EDUCATIONAL MATERIAL
Vol 4 No 1 March 1969

ACADEMIC ACHIEVEMENT

1 **AHLUWALIA S P, SIDHU N:** Study of personal problems of some adolescent girls and their effect on academic achievement. Journal of Psychological Researches 1969, 13(1), 56-7.

A personal-problem check-list together with a short questionnaire was administered to 260 adolescent girls (mean age 15.48) studying in class IX of five secondary schools in Ferozepur district (Punjab State). The relationship between the two variables was determined by the chi-square technique. Pearson's Product-moment Correlation and Contingency Coefficients were also compared to verify the results. The significant findings are: 1) of the 137 problems, 36 were marked by 50% or more subjects; 2) a significant problem not included in the check-list was: difficulty in learning English, social studies and arithmetic; 3) the average number of problems ranged from 6.2 to 16.3; 4) the maximum number of problems were in the areas 'school' and 'society' and the minimum in the area 'health'; 5) the more the number of personal problems the lower is the level of academic performance. But the relationship between the two variables was not statistically significant; 6) problems in the area 'emotional', appear to have greatest effect on academic achievement.

2 **BHATNAGAR R P:** Identification and emotional adjustment as factors of academic achievement. Education and Psychology Review 1969, 9(1), 34-41. 36 ref.

Presents a review of some recent views and research findings which consider identification and emotional adjustment as important factors influencing academic achievement. The findings may have far-reaching impact on the principles and practices of teaching and learning, guidance and counselling in schools. Greater attention may have to be paid to the development of the emotional health of the child in order to provide the fullest benefit of education to him. It may be thought that the child's emotional life is the basic matrix which interprets the world for him and determines at what level and to what extent his intellectual potentialities should operate and help him.

3 DEB M: Expert's opinion on required abilities for high achievement in natural science. Psychological Studies 1969, 14(1), 47-50. 5 ref.

An open questionnaire containing 14 descriptions of abilities was sent to 427 headmasters of higher secondary schools offering science course in West Bengal, 100 heads of departments of natural science of different universities in India and to 20 psychologists of U.S.A., U.K. and Australia. The corresponding number of replies were 240, 40 and 12. Ranking was obtained for each item from the three groups. The extent of agreement among the three sets of ranks was determined by Kandal co-efficient of concordance (Siegal S: Non-parametric statistics for the behavioural science. N.Y., McGraw-Hill, 1966. 229). It was found to be .35 significant at .001 level indicating that the three groups ranked the items almost in an identical manner. From the pooled ranks, the standard order of each item was obtained. Pooled data show that intelligence is an essential factor in high achievement in the subject. Next in order of importance are numerical ability and mechanical ability. Verbal ability has the least importance [see also Indian Educational Material, vol.2, abstract no.470].

4 GOPAL RAO D: Study of some factors related to scholastic achievement. Delhi, Central Institute of Education (NCERT), 1968. 40p. 72 ref. (CIE Studies in Education and Psychology, publication No.61).

The sample consisted of 500 boys (age group 13-14) in schools located in the city area of Delhi and using Hindi as the medium of instruction. The tools used were: 1) verbal test of intelligence; 2) study habits inventory; 3) socio-economic status scale; 4) school-attitude inventory; and 5) a battery of achievement tests. The tentative conclusions are: (A) intelligence: 1) scholastic achievement is related more strongly to the intellectual level of the study than to any other characteristic; 2) high correlations occur between intelligence and achievement in social studies, general science, and mathematics; 3) income, education and occupation of the parents seem to be related to the intelligence of the pupil;

4) study habit or school attitude has no relationship with intelligence. (B) study habits - 1) correlation between study habits and achievement was negative but very low; 2) positive and significant relationship existed between study habits and socio-economic status; 3) study habits of high and low achievers do not differ significantly. (C) socio-economic status - 1) positive relationship existed between socio-economic status and achievement; 2) socio-economic status did not affect the study habits of the pupil and his school attitudes. (D) school attitude - low positive correlation between school attitude and scholastic achievement could be noticed. The conclusions are: 1) the three independent variables - intelligence, study habits, and school attitudes are significantly related to the prediction of scholastic achievement while socio-economic status is not; 2) the multiple correlation between the achievement score and the scores of intelligence, study habits and school attitude is quite high, indicating that it is possible to place high reliance on the prediction of the scholastic achievement of a pupil from the independent variables; 3) the variables intelligence, study habits, and school attitude contribute jointly to 66% of the predicability of the scholastic achievement, while the remaining 34% of the variation in achievement is yet to be accounted for.

5 GUPTA V P, KAPOOR S K: Persistence, intelligence and academic performance. Indian Journal of Applied Psychology 1969, 6(1), 22-4. 8 ref.

The object of the study was to evaluate the efficiency of intelligence, economic status, and persistence on mental task in combination and separately as the predictor of academic performance. The sample consisted of 80 school students (40 male and 40 female) in the age group 12-16 studying in IX class of randomly selected higher secondary schools in Patiala (Punjab). Data regarding age and family background were collected from the subjects and school records. The results indicate that the subjects who are above average in intelligence, persistence on mental task and economic status can be predicted to be significantly higher in academic performance; 2) the combined effects of the variables is significantly higher than the effects of each factor separately; 3) the order of variables in the multi-correlation was academic success, intelligence level, persistence on mental task, and economic status.

6 KULKARNI S S, NAIDU C A S, ARYA M L: Survey of mathematics achievement in Indian schools. Indian Educational Review 1969, 4(1), 1-33. 3 ref.

The survey was conducted on a representative sample of about 1500 schools from all the States (except Bihar and Madras). Within each State the sample was stratified into regions based on cultural/linguistic homogeneity, sectors (urban and rural), sex (boys and girls), and type of management. Besides, Central schools sponsored by the Union Ministry of Education and public schools affiliated to the Council for the Indian School Certificate Examinations were included in the study. The tools used were two equivalent forms of achievement tests in mathematics, constructed for the three levels of schooling, i.e., primary, middle and high, and translated into different Indian languages. The main findings are: 1) the national performance is quite below the desired level; 2) students fail miserably on application of knowledge to new situations, logical reasoning, evaluation, synthesis, etc.; 3) wide differences exist between the different regions of a given State especially in those States where the regions have had different historical and linguistic backgrounds. (No inter-State comparison was attempted in view of the wide variation in the syllabus); 4) students from urban sectors showed better performance; 5) on the whole the public schools have done better. The central schools have shown consistently better performance than the State government and private schools; 6) students of the model age-group or younger students showed better performance than those belonging to the higher age-group; 7) boys have done better, but there are some remarkable exceptions; 8) no appreciable relationship exists between the composite score on the socio-economic scale and mathematics achievement. But significant positive correlations exist between achievement and the levels of father's occupation as well as that of mother's education; 9) students getting higher scores have favourable attitude to the subject; 10) students who usually get a higher score in their school examinations scored higher on this test also. The implications of the findings have also been discussed.

7 MUTHAYYA B C, RAJESWARI S: Personal aspiration and its relation to achievement motive. Journal of Psychological Researches 1969, 13(1), 52-5. 3 ref.

The sample consisted of 58 female student teachers (age group 17-21). The tools used were: 1) a pictorial non-verbal ten-point 0-10 ladder scale to measure personal aspiration; and 2) Murray's TAT cards 7 BM and card H (McClelland. Achievement. N.Y., Appleton-Century Crafts, 1953) for assessing achievement motive. The ladder scale was presented to the subjects and they were asked to indicate their positions on the scale with regard to three time dimensions (present, past and future) for the four variables - contented life, educational achievement, sociability and economic status. The conclusions are: 1) no significant relationship exists between personal aspiration and achievement motive; 2) the high and low groups in n-achievement do not differ significantly in each of the time dimensions for the four variables.

8 SRIVASTAVA K: Reading ability and underachievement. Indian Educational Review 1969, 4(1), 116-22. 20 ref.

The sample comprised four groups of 150 boys each, representing the four categories (underachievers, overachievers, high achievers and low achievers) selected out of a random sample of 1837 students of classes X and XI. Three tests of ability - Mohsin's Verbal Intelligence Test and Science Aptitude Test (Educational and Vocational Guidance Bureau, Bihar) measuring verbal comprehension and numerical facility respectively, and Raven's Progressive Matrices Test measuring abstract reasoning - were used to select the sample. Three reading tests were used for the study: 1) Hindi adaptation of Green's Michigan Speed of Reading Test; 2) Sharan's Hindi Vocabulary Test (M.Ed. thesis. Patna University, 1964) for senior high school students, and Mohsin's Hindi Spelling Test (Educational and Vocational Guidance Bureau, Bihar). The composite score of the test was taken as the measure for general reading ability. The conclusions are: 1) in comparison to high achievers, underachievers are slow readers, and as speed and comprehension are related, they also lack the capacity to derive much meaning from what they read. The high achievers are more familiar with, and can give more thought to, what they are reading; 2) the underachievers had a poor stock of words and consequently lacked the power of expression. They also commit spelling mistakes; 3) the two factors - poor speed and comprehension and poor power of expression seem to be related to the poor achievement of underachievers.

ADMINISTRATION AND ORGANIZATION

9 BHATTACHARJEE H P: Educational administration - an evolutionary process. Educational Review 1969, 75(1), 5-6.

Educational administration has been described as an evolutionary process reflecting the history of the country. Thus the administration in British period was not fully devoid of the influence of the pre-British period. It has also close link with the cultural heritage of the nation. The chosen political ideology of the nation also dominates the educational administrative pattern; however, it is pointed out that in the interest of all-round development of the individual, there should be freedom to frame aims and ideals of education and implement them. Educational administration should also take into consideration the changing patterns of society.

10 DE SOUZA A: Autonomous college, the quest for quality. Social Action 1969, 19(1), 28-35. 12 ref.

The postponing of the decision on the creation of autonomous colleges by the conference of Vice-chancellors held in September 1967 has been criticized. It is pointed out that this evasive attitude suggests the traditional and persisting unwillingness to accept quality as the principle of discrimination among affiliated colleges. Quality of education never determined the policy in respect of governmental grant-in-aid to the affiliated colleges, during the British regime and in the independent India though for different reasons. This has operated as a serious disincentive to the pursuit of academic excellence. Consequently universities concentrated merely on dissemination of knowledge to the neglect of discovery of new knowledge. The creation of a chain of national centres, institutes and laboratories which are deemed universities is cited as an example of the governmental loss of confidence in the capacity of the Indian university to develop a critical mass of scholars and scientists. It is in this context that the Education Commission (1964-66) suggested the creation of autonomous colleges as a corrective to the misguided egalitarianism imposed by the present grant-in-aid system. Such autonomous colleges would provide a healthy competitive atmosphere wherein the academic standard grows. The university would have valuable opportunities to reactivate its most dormant role of intellectual leadership through the autonomous colleges.

11 GOVIL K P: Administrative reforms in universities - some suggestions. University News 1968, 6(12), 17-19.

The vice-chancellor should have a competent and devoted staff in the faculty and the administration. To ensure objectivity in selection to various posts, care should be taken to appoint independent men as experts in selection committees. A manual enunciating clearly the university objectives, policies and procedures is indispensable. There is need for decentralization of functions and powers at all levels and this should be commensurate with the position, qualification, training and experience of the administrative and academic personnel concerned. There should be effective two-way communication in the hierarchical set-up as well as between the administration on the one hand and students or staff on the other, before any vital decision is taken. It is good to have advisory committees whose function should, however, be limited to formulation of policies. In large-sized universities, it would be useful to have an operational research centre. The case study method of training for senior administrators is preferred to other methods. Till such time as the training institutions for administrators are established, the University Grants Commission could give financial assistance for periodical conferences, seminars and visits to other universities for senior officers, summer institutes for junior officers, and in-service training for ministerial staff.

12 INTER-UNIVERSITY BOARD OF INDIA AND CEYLON, NEW DELHI
IUB 44th meeting, Board discusses problems of urgent academic importance. University News 1967, 7(2), 14; Concern of interference in varsity autonomy. Amrita Bazar Patrika 13 January 1969, p.7, Cols. 7-8; Vice-chancellors move to revise structure of universities ibid 13 January 1969, p.9, Cols. 4-5. 4000 words.

The Board deprecated the present practics of providing ad hoc maintenance or development grants to universities and the basis of their calculation. The recommended basis of block maintenance is: 1) annual expenditure incurred under the settled channels of expenditure; 2) increase in expenditure envisaged in view of developmental schemes; 3) expenditure that became committed on cessation of UGC Plan assistance; 4) expenditure on campus development and expansion of physical facilities not covered by UGC schemes; 5) increased expenditure due to increase in salary and allowances of staff; and 6) 6% increase to meet the expenditure involved in the annual increments of the staff. Other resolutions and recommendations are: 1) expression of concern at the increasing interference in university autonomy; 2) appointment of a committee to suggest changes in the university structure to meet the changed conditions; 3) increased provision of student services in all future educational planning; 4) introduction of a two-year law course for those interested in academic qualification, and a special three-year course for those wishing to join the legal profession; 5) disappreving the proposed Madhya Pradesh legislation regarding the nomination of officials on the Senate and other bodies of universities by the State Government; 6) laying down clearly the basis for setting up new universities. The Board did not agree with the suggestion of the Education Commission that new universities should automatically become its members.

13 JOHN V V: Alarmed academics - the future of Delhi university. Times of India 27 January 1969, p.8, Cols. 3-5. 1750 words.

Creation of another university centre in south Delhi to check the unwieldy growth of Delhi University and to solve the consequent problems of falling standards and growing student indiscipline, as suggested by some teachers of Delhi University, has been criticized. Increasing enrolment is a problem for all affiliating universities. Creation of new universities is an expensive solution to the problem. It has been suggested that granting a large measure of autonomy to individual colleges in respect of curriculum making, teaching procedures and examination, and at the same time preventing the lowering of standards, would be a more potent solution. The problem of student unrest has an educational solution, and the teachers should face the problem rather than avoid it. The situation would not improve unless the majority of the Delhi Colleges are better organized and act with a higher sense of individual responsibility.

14 KAULA B N: 'Academic' democratization. Publishers' Monthly 1969, 2(2), 22, 25-6.

Equal right of all teachers and students to participate in the decision-making process, as suggested by Dr. Bipan Chandra (Avenues, November, 1968), has been criticized. Alternative suggestions are: 1) greater participation of teachers in the Committee of courses; 2) associating teachers in the functioning of the Academic Council; 3) involving teachers in the academic matters of different departments; 4) providing sufficient safeguards against unfair selection; 5) consulting staff council on policy decisions regarding the functioning of the college; 6) vesting administrative responsibility of implementing policies in an academic person; 7) associating students only with decision-making in non-academic activities and the administration of discipline.

15 MATHAI S: University constitution. University News 1969, 7(3), 11-12.

A radical change in the structure and functions of university organization has been suggested to secure the fulfilment and realization of the true nature and purpose of a university. The syndicate and senate should be abolished and a Board of Governors should be set up consisting of 20-30 eminent people representing the government, industries, and scientific, literary and cultural activities of the society. The Board should be responsible for the finances, general direction and appointment of the vice-chancellor/president of the university. An executive council consisting of officers and selected teachers of the university and a few respresentatives of the government would look after the management of the finances and general administration. The main academic body - academic council - should consist of representatives from various faculties and research departments, and learned professions, trade and industry. The vice-chancellor should be the main link between the various bodies of the university and execute the recommendations of the aacademic council.

16 MATHUR S S, MANJIT KAUR: Influence of local politicians in the day-to-day administration of higher secondary schools in district Amritsar (Punjab). Journal of Education and Psychology 1969, 26(4), 258-64. 3 ref.

A sample of 47 government and privately managed schools for boys and girls in urban and rural areas were chosen for the study. Separate questionnaires were administered to teachers and heads of the schools and ten political leaders were personally interviewed. The study revealed that all the schools are subject to interference by local politicians. The teachers, heads and politicians have all indicated the same areas of interference viz., school finances, teacher selection, school discipline and general administration, and provision of courses. While the heads reported maximum interference with regard to school finance, teachers reported maximum interference in provision of courses.

17 Responsibility for students [Editorial]: National Herald 25 March 1969, p.5, Cols. 1-3. 720 words.

Even the universities favouring the participation of students in the management of universities differ on the extent to which responsibilities should be entrusted to them. Participation of immature students in the policy-making process may make a mess of university affairs. The authorities also do not want to part with power. Supporting the student participation in university affairs, it has been contended that the inclusion of the right type of student representatives in the decision-making bodies may make the students act responsibly. It is invidious to say that the Indian student is not as mature as the average student in the West. Experiments on student participation might result in a better approach on the part of universities to student problems. Students might be able to spot the defects in the curricula and the examination system and also suggest facilities required for their physical and mental growth.

18 SHARMA M: Comparative study of organizational climates of government secondary school and private secondary school of Churu District, Rajasthan. Journal of Educational Research and Extension 1969, 5(3), 120-6. 12 ref.

The study was designed to examine the following hypotheses: 1) government secondary schools differ from private secondary schools in their organizational climate; and 2) organizational climates have close relationship with schools' achievement. Fiftysix boys' schools and girls' schools (34 government and 22 private) were chosen for the study. OCDQ (Organizational Climate Descriptive Questionnaire) developed by A W Halpin and D B Croft was used to study the organizational climate of the school. The marks obtained by students at the secondary school examination were taken as the measure of scholastic achievement. The study revealed the following: 1) no significant differences exits in the organizational climates of government and private secondary schools; 2) organizational climate is significantly related to the achievement of the students, the headmasters mostly behave in the same way; 3) "morale" is found to be high in government secondary schools as compared with private secondary schools.

19 Student autonomy? [Editorial]: Times of India 31 March 1969, p.8, Cols. 1-2. 920 words.

The consultative committees of students and teachers set up by universities to look after library facilities, welfare schemes, hostels, and discipline have not been successful because of the paucity of funds to implement their suggestions. However, student participation in the management of universities may enable the agitators to come on top. Despite the suggestion by a panel of Vice-chancellors and educationists that curricula, academic standards and appointment of teachers are spheres where there cannot be any student participation, Gorakhpur University proposed to discuss curricula and examinations with student representatives. Indian students are less mature than their counterparts in the West who can make meaningful contribution to a discussion on the content and structure of the courses of study and allied problems. Hence it is pleaded that the dialogue on these matters should be confined to postgraduate students.

20 WILLEY M M, BRANCH J A: Self-study manual for Indian universities and colleges. Calcutta, Ford Foundation, 1968. vi, 79p.

The publication is a guide to assist universities or individual colleges in self-analysis to understand themselves and view their problems in full perspective. In the context of the recommendations of the Education Commission, it outlines how planning bodies can be set up at the university and college level and how these can systematically analyze the tasks of education, administration and management and how the various elements can be integrated and implemented. The manual covers the following aspects: 1) analysis of educational objectives and determining the educational task; 2) analysis of resources and functions relating to the achievement of goals - (a) organization and administration, (b) educational and instructional programme, (c) sources and uses of funds, (d) teachers, (e) library, (f) students, (g) research and postgraduate education, (h) buildings and grounds - physical plant, (i) special instructional programmes and activities within the institution and relating to the community; 3) preparation of a report and formulation of a development plan. The appendix gives a statement of definitions and a series of sample forms needed for drawing up the plan.

ADULT EDUCATION

21 ADALENE M: Grihini schools - an experiment in adult education. Social Action, 1968, 18(1), 56-64.

Describes the residential course of five months' duration to train young illiterate tribal girls for their future role as mothers and housewives. The syllabus includes Hindi, arithmetic, cooking, sewing, needlework, knitting, gardening, crafts, poultry, home-nursing, home management budgeting, mother-and-child care and hygiene. The medium of instruction is Hindi. Significant changes were noticed in the girls after training. The following suggestions were made by the sponsors of the schools: 1) child care, hygiene, cooking, needlework and religion should have more prominence than other subjects; 2) illiterate students should have more practice in speaking Hindi; 3) literate girls should have a separate course; 4) school-girls could be made to help in recruiting grihinis; 5) school-girls from the parish, especially of the high school classes, could also help Grihini students with stitching, knitting, reading and writing; 6) if possible, grihini students should live in the same boarding house with other school-girls; 7) men of marriageable age should also have some equivalent training in new methods of cultivation, horticulture, and animal husbandry.

22 ALL INDIA ADULT EDUCATION CONFERENCE, 22ND, PONDICHERRY, DECEMBER 1968. Resolutions. Indian Journal of Adult Education 1969, 30(1), 3-4, 14.

Some of the resolutions are: 1) allocation of adequate funds for adult education in the Fourth Plan and ensuring their utilization; 2) constituting a national plan to eradicate mass illiteracy and achieve functional literacy; 3) involving voluntary agencies like adult education associations, cooperative unions, and trade unions engaged in adult education activities in functional literacy and life-long education projects and providing necessary assistance to them; 4) organizing training courses by universities for people engaged in adult education activities; 5) inclusion of adult education as a discipline in the university curriculum; 6) organizing literacy programmes and schemes of continuing education by State governments for their employees; 7) including education for co-operation as a part of the comprehensive programme of adult education; 8) observing the Gandhi Centenary Year (1969) as Literacy Year by all adult educators and government and non-government agencies; 9) giving top priority to adult education programmes in the Social Service Programme for students; 10) making family planning programme a regular part of adult education activity; 11) ensuring closer cooperation between the adult education movement and the trade union movement.

23 INDIAN ADULT EDUCATION ASSOCIATION: Adult education for parliamentary democracy - report of the sixteenth national seminar, Pondicherry. December 26-29, 1968. New Delhi, the Association, 1969. 86p.

The recommendations of the seminar are: 1) laying emphasis on the education of legislators, cadres at different levels, civil service and professional men and women in the basic tenets of parliamentary democracy; 2) designing an appropriate programme of adult education for different groups at different levels by experts on techniques of adult education and parliamentary democracy; 3) making use of the media of mass communication, particularly of audio-visual aids like TV; 4) constituting a national authority or commission under an Act of Parliament, to grant subventions, to supervise and to evaluate programmes of general education, and to sponsor research; 5) establishing an institute or centre for adult education for parliamentary democracy by the Indian Adult Education Association, which should (a) conduct correspondence courses for various groups of citizens interested in civic education, (b) organize study camps or extension lectures for civic education, (c) produce reading material simple in langugge but mature in thought content, (d) organize short-term credit courses for different interest groups. The report includes the following documents: 1) working paper by M. Singhvi [see abstract no. 26]; 2) inaugural address by M.S. Adiseshaiah, and presidential address by B.D. Jatti; 3) the need of adult education for developing enlightened political consciousness by Maganbhai Desai; 4) scope and programmes for promotion of enlightened political consciousness by J.C. Mathur [see abstract no.24]; 5) a national plan of adult education for parliamentary democracy - some suggestions by M.C. Nanavatty.

24 MATHUR J C: Scope and programmes for promotion of enlightened political consciousness. Indian Journal of Adult Education 1969, 30(2), 6-8.

The various programmes suggested are: 1) organizing training in collecting information and techniques of self-expression, partly as an ancillary to college education and partly as an adult education programme, for young leaders in small towns and rural areas; 2) giving young adults a thorough grounding in the techniques of oral presentation and in the ways and means of active and effective participation in the group-structure; 3) educating the electorate in the responsibilities of democratic citizenship; 4) exposing the new interest groups (e.g. farm labourers, small farmers) to an educational process deriving its content and methods from their economic and vocational needs; 5) formulating a programme which will make the Establishment (bureaucracy, executives of cooperatives and various non-government financial and administrative organizations and similar institutions) more responsive to the environment and to the specific needs of parliamentary democracy; 6) imparting to the individual citizen knowledge which is far beyond literacy and is much more than education. Thus, the two major steps needed for parliamentary democracy are: 1) a carefully planned organization of training in citizenship and skills of self-expression for the voters, the Establishment, the legislators, and the decision-makers; 2) a campaign for the re-education of the educated.

25 RAO V K R V: Adult education and socio-economic development. Go Teach 1969, 6(1), 8-10.

Adult literacy and adult education are necessary for ensuring the following requirements of economic and social development: 1) knowledge and desire for better ways of living; 2) readiness on the part of the masses to take to new ways of production, discarding traditional techniques; 3) adoption of a commercial attitude by rural people to their economic activities; 4) creation of a rational attitude; 5) development of a correct social attitude; 6) correct attitude towards education and knowledge; 7) taking a long-range view for the development of the society. Adult education should be distinguished from all other types of education since it is more functional and more closely related to economic and social development. Programmes like production of reading materials and multiplication of libraries and mobile libraries should be taken up for the utilization of the literacy achieved.

26 SINGHVI L M: Adult education for parliamentary democracy. Indian Journal of Adult Education 1969, 30(1), 9-12, 15. 6 ref.

The working paper presented at a national seminar on the subject organized by the Indian Adult Education Association stressed that universal adult suffrage would be a success only if universal adult education is ensured. Increasing emphasis on adult education for the development and transfer of technology and vocational skills to the fields and factories calls for equal emphasis on adult education for social responsibility, citizenship and democracy. The curriculum should, therefore, include the main events in India's freedom movement, the advent of modern parliamentary democracy in India, the essentials of the Indian constitution including the machinery of political organization, the electoral system, duties and obligations of citizenship, fundamental rights of individuals, and the judicial system. The programme should embrace the entire adult population including the literate, and special stress should be given to the education of adult women. Community development programmes should be reoriented and urban community development programmes should also be undertaken. Mass media of communication should be extensively used. Suitable literature for adult education in different languages should be produced. University colleges and schools must have extension activity in adult education for social responsibility and citizenship. A national programme for adult education for democracy should be administered by a national authority, and should have the sanction and approval of Parliament which should lay down the framework of policy and programme for the national authority.

BASIC EDUCATION

27 PARIKH A K M: Evolution of the basic education. Educational India 1969, 35(9), 291-6. 29 ref.

Presents an analysis of the development of basic education scheme. The idea originally conceived by Gandhi while in Africa went through a period of growth from 1914 to 1937. The concrete proposal was presented by him in a conference of selected educators and administrators at Wardha in 1937. The discussions led to the adoption of the following resolutions: 1) provision for free and compulsory education for seven years on a nation-wide scale; 2) use of the mother tongue as medium of instruction; 3) relating the training to a craft chosen with reference to the environment of the child. The system of education should in due course be able to cover the remuneration of teacher. A special committee headed by Dr. Zakir Husain within the framework of the resolutions devised an educational scheme called Wardha Scheme, later known as 'Basic Education' or 'Buniyadi Talim'. The Committee was influenced mainly by the following Gandhian directives: 1) spinning should be introduced in all schools; 2) education should enable the child to earn a living; 3) basic education should be self-supporting; 4) it should be a rural scheme rather than urban; 5) it should be imparted through a craft. Though the Committee incorporated many of the Wardha resolutions, its methods of teaching through craft were different.

The new concept of correlation was

introduced, through which the physical environment and the craft became the nuclei of the curriculum. While Gandhi's scheme was based on economic, political and ethical considerations, the Wardha Scheme was based on educational principles.

COURSES OF STUDY (HIGHER EDUCATION)

28 ALL INDIA CONFERENCE ON MANAGEMENT EDUCATION AND TRAINING, POONA, JANUARY 1969: Management training - warning against isolated specialization. Economic Times 25 January 1969, p.6, Cols. 5-8. 610 words.

Mr R. Mathai, Director of the Indian Institute of Management, Bombay cautioned against isolated specialization in management training, since the management problems of expanding professions like industry, banking and agriculture would increase to such an extent that the executives in one sector would be required to be equipped also with adequate knowledge about the allied sectors. The main suggestions made by the participants were: 1) institution of a national association of management teachers to evaluate the training programme in terms of the training needs; 2) strengthening intra-institutional collaboration through mutual exchange in various fields to facilitate evaluating the effectiveness of the training programmes; 3) providing assistance by business organizations to academic institutions in the preparation of teaching material; 4) helping universities in training teachers, and framing their courses by the management institutions: 5) discriminating and discerning use of management techniques.

29 CHATURVEDI R C: Training of plastics engineers at I.I.T., Bombay. Popular Plastics 1969, 14(1), 27-31.

Traces the development of postgraduate diploma course in plastics engineering introduced in I.I.T., Bombay in 1966. The course basically aims at providing a level of knowledge comparable with that required by the Plastics Institute for its associateship examination, based on the experience gained in running the course. Several changes have since been made for equipping the students with the fundamentals and also some details about the design of processing equipment, processing methods for various plastics and end products, as well as the design and manufacture of moulds for specific end products. The teacher staff includes representatives from various plastics industries. After making an assessment of the course, the following problems have been pointed out: a) the syllabi being covered by a number of lectures, coordination becomes difficult, resulting in overlapping, repetition and also omission of topics; b) lack of proper contact between the teacher and the taught; c) lack of cooperation of the industry in providing guidance for completion of the projects. The following suggestions have been made: a) recruiting persons with industrial experience; b) training existing faculty members in the new field; c) industries could offer funds for setting up laboratories and also carry out part of their development work in the Institute.

30 CHEMBURKAR V W: Collaboration between industry and technical institutions. Journal of Association of Principals of Technical Institutions (India) 1969, 21(3-4), 88-93.

Describes the collaboration between Jyoti Ltd, Baroda (Gujarat) and the teachers of M S University of Baroda and Vallabh Vidyanagar, Anand (Gujarat). The teachers act as consultants and work with groups of development and research engineers on different projects. The arrangement helps the industry to keep abreast of the latest theoretical advances. Close collaboration with the industry helps the universities to assess properly the technical needs of the industry, and the teaching method and syllabi can be modified to meet these needs. The consultancy arrangements have achieved the desired result. Similar arrangements between industries and other technical institutions have been recommended. Such collaboration may also be extended to other fields including economics.

31 DAYAL I: Training of executives - an evaluation. Manpower Journal 968, 4(2), 82-9.

The skills needed for effective management are the development of appropriate organizational systems, and the skills needed to analyze, collate and interpret data, and finally to utilize them in making decisions. The training of executives should be considered in this context and the responsibility of the organizations and institutions would be to create conditions in which training would be most effective. Three points about the training should be clearly understood: 1) it is useful for some and not for all; 2) it serves some purposes and not all purposes; and 3) it is useful provided the organization is capable of using it. Three reasons explain the poor returns on training expenditure: 1) the chief executive and senior managers are unwilling to get training; 2) the company is not used to self-questioning and experimentation; 3) the trainees are incapable of learning. A serious training activity should aim at integrating subject knowledge and interpersonal relationships by optimum involvement of the participants. Some examples of such management training courses have been described.

32 EVERARD K A: Education for industry. Journal of Association of Principals of Technical Institutions (India) 1969, 21(3-4), 94-106.

Suggests a reorganization of engineering courses, with special reference to civil engineering, to suit the needs of the industry. At the undergraduate level the course should be based on the fundamentals of engineering science, taught within a framework of engineering reality, without much time being spent on the teaching of techniques. A project should be an important part of the final year. At the postgraduate level a three-tier course, terminal in nature, has been proposed: 1) one-year lecture course and a special design project leading to a postgraduate degree; 2) one-year research project leading to Master's degree; and 3) two or three-year research project either different from, or an extension of, stage 2 and leading to a doctorate degree. The stress on the conventional examination system should be reduced. State boards for practical training of engineers should be set up. For the training of technicians, stress should be on the study of techniques. Craft training should be industry-based in the form of sandwich or part-time day release course.

33 GHOSH A B: Commerce education - a study of some aspects. Delhi, Sultan Chand and Sons, 1968. xvi, 119p. 29 ref.

The three sections deal with 1) evolution of commerce education in India; 2) commerce education abroad; and 3) an appraisal of commerce education including an analysis of the objectives and suggestions for improvement through reformulation of courses, reconsideration of admission policies, and reorientation of teaching methods and research. Besides, a note on commerce education at the Delhi University and a statistical appendix depicting different aspects of commerce education in India and other countries have been given. As regards course, contents, economics should be attuned to the different objectives of three levels, B.Com., M.Com. and M.B.A. The M.B.A. course should include a thorough training in the analysis of economic and business conditions, relation between business, government and the community. At the undergraduate level the course should include analytical tools of mathematics, statistics, law and accountancy; the student should have a knowledge of the allocative behaviour of modern profit-price system with emphasis on the economics of a business enterprise, knowledge of money and credit, and complete business cycles and forecasting. The M.Com. stage should include: 1) a course in managerial economics; 2) general economic fluctuations; 3) distribution of income; 4) method of application of economic principles and ideas in functional areas; 5) role of government in business.

34 RANDHAWA M S: Agricultural universities in India - progress and problems. University News 1969, 7(1), 16-17, 21-2.

Traces the historical development of agricultural universities and discusses the role of USAID and U.S. Land Grant Universities in the working of these universities. Some of the important functions of these universities are: 1) development of high-yielding varieties of wheat, maize, bajra and jowar; 2) undertaking purposeful and problem-solving research; 3) dissemination of useful knowledge to farmers. Besides improvement in the quality of education, the new system based on the concept of integration of teaching, research, and extension has reduced the wastage in higher education, thus reducing the cost of education. This in turn has provided training opportunities for a larger number of students. Some of the specific contributions made by the agricultural universities have also been described. Transfer of state-wide agricultural research, education and extension activities to agricultural universities has been urged.

35 SUBBA REDDY D V: Syllabus of history of medicine for India. Indian Journal of Medical Education 1968, 7(6), 540-3.

The course of 12 to 18 lectures may be divided into two parts: 1) the first part given in the pre-clinical year; and 2) the second part at the commencement of the clinical year. In the pre-clinical year, the student would be taught the origin and growth of the profession, history of medical education and development of knowledge of basic medical sciences and their application and role in the clinical subjects, as well as the history of medical discoveries, medical literature, and the art and science of medicine in ancient, medieval and modern periods. In the clinical years, students might be taught the history of concepts of diseases, classification of diseases, drugs, their properties and action, principles of treatment, including physical, psychological and surgical therapy, as these developed from Greek medicine, through renaissance period upto modern medicine. Finally the students might be given an outline of the history and development, and principles and practice of Indian system of medicine, bringing out similarities and divergences between this system and other systems, its inter-relation with medicine in other countries in different periods of our civilisation, and stressing any special features and characteristics of the Indian system.

36 VARADAN M S S: Reorientation of technical education in universities to suit the needs of industries. Machine Tool Engineer 1969, 9(4), 44-9.

Discusses two areas of technical education which need reorientation, viz. qualitative improvement of technical education, and diversification of courses to meet the need of diversification in industry. Suggestions for improving the quality of the courses are: 1) selection of students using psychological and comprehension tests; 2) providing a minimum of modern basic equipment. Cooperative workshops may be formed for this purpose; 3) establishment of contact between institutions and industries in the surrounding areas; 4) exposure of teahing staff to industry; 5) production of indigenous equipment in collaboration with industry. Suggestions for diversification of courses are: 1) designing courses in accordance with the needs of the industries in the geographical proximity; 2) providing technical experience in industries in the specialized areas. Initiating part-time courses in specialized branches of study for technical personnel in industry has been suggested to meet the long-standing need of these courses for technical personnel and to divert the available extra capacity in the educational institutions.

37 VIRARAGHAVAN T: Public health engineering education in India. Environmental Health 1969, 2(1), 54-64.

Traces the development of public health engineering education in India and describes the facilities now available for postgraduate education. Of the 13 institutions conducting postgraduate courses (table 1), two offer diploma and the rest Master's degree. The course content is not uniform and comprises a wide variety of subjects like basic science, principles of preventive medicine, water supply and waste disposal, environmental sanitation, structural engineering, radiology and computer technology. Instead of being essentially civil-engingeering-oriented, the course should consider problems like environmental health, and industrial waste disposal affecting public health. The details of the Ministry of Health training programme in public health engineering already in operation, and additional programmes envisaged are also discussed.

CURRICULUM

38 **AARON P G**: Two studies on concept development and their curricular implications. NIE Journal 1969, 3(3), 28-33. 8 ref.

The object of the studies was to find out whether information presented to children who have not reached the stage of concept readiness helps them in the development of the concepts concerned. A sample of 503 boys (age group 6-11.3) reading in the fifth standard of primary schools of Dharwar was used for the studies. Fourteen questions relating to time concept and 6 to space concept were prepared. They were intended to test the boys' ability to retain information, and capacity for understanding. After an informal interview, each student was administered the questions one after the other in the prescribed order. Credit was given if the answer showed a general understanding of the problem. The following conclusions have been drawn: 1) ability to retain information, and ability to conceptualize increase with age; 2) while children could answer questions pertaining to information very few are able to answer questions which require manipulation of this information; 3) the ability to abstract and generalize grows with age, and providing more information would not accelerate the conceptualizing process. In other words, teaching of facts before a child is mature enough to conceptualize such facts, is a waste. Since the value of subjects like history, geography and social studies is doubtful at the primary stage, their introduction may be deferred at the primary stage, their introduction may be deferred until standard 8 and the time saved by the elimination of these subjects could be profitably utilized for a better study of the three R's.

39 **BOURAI H H A**: Theoretical conceptions of curriculum. NIE Journal 1969, 3(3), 49-51.

A theoretical study of the development of the curriculum has been made on the basis of subject matter, expression and experience: 1) Subject-matter theory. The curriculum was first conceived in terms of subject matter. Prescribed materials determine the activities of children. Another conception concerns the content curriculum, which emphasizes the selection of right subjects and topics. Further, the curriculum determines what a student should learn to engage himself successfully in all the activities of life. However, pre-determined activities are likely to neglect the interests of pupils. Therefore, the subject-matter theory of determination of the curriculum has been held unsatisfactory both in its theoretical and practical aspects; 2) Expression theory. The exponents do not believe in determining anything in advance and depend on activity curriculum or activity programme. The theory may be further sub-divided into (a) overt activity conception, meaning that almost any kind of manual activity is a desirable curriculum activity, (b) centres of interest conception, that curriculum activities are related to specific topics called centres of interest, (c) purpose conception, which confines the curriculum to purposeful activities; 3) Experience theory. According to educational experimentalists, desirable curriculum consists of activities that supply desirable experiences. Curriculum construction is based on relativity, sociality, motivation, creativity, selectivity and the unity of experiences.

40 **LULLA** B P: Research and experimentation in school curriculum. NIE Journal 1969, 3(3), 76-81. 10 ref.

A review of the 250 curriculum studies done in Indian universities shows that research and experimentation in this area have been largely neglected or done haphazardly. No attempt seems to have been made to develop a curriculum theory based on Indian educational thought and no professional organization exists to deal with the problem. There is vast scope for research and studies in India. The following seven main factors involved in curriculum research and experimentation have been illustrated diagrammatically: 1) curriculum of schools; 2) teachers; 3) textbooks; 4) teaching aids; 5) guidance and counselling; 6) supervision and administration; 7) examination and evaluation. The issues of investigation in each factor have also been listed.

41 **MEHTA** T S: Changing social scene in India and curriculum goals. NIE Journal 1969, 3(3), 18-21. 13 ref.

A critical study of contemporary society is a prerequisite for the development of curriculum in order to make education a creative agent of social change. In the Indian context this point assumes special change. since the traditional Indian society is undergoing a rapid change by the forces generated by science and technology and the democratic idea. Some of the easily discernible problems of contemporary society which have curricular implications are: 1) developing democractic life; 2) fostering national unity; 3) raising standard of living; 4) modernizing the society; and 5) ushering a cultural renaissance.

42 **RUHELA** S P: Sociological considerations in curriculum construction. NIE Journal 1969, 3(3), 72-5.

Discusses the following sociological factors which should be taken into account in preparing school curricula, books and other instructional material: 1) core values of Indian society; 2) changing values of the people; 3) stage of development of the nation; 4) socio-cultural lags in society; 5) demands of modernization; 6) criteria of good family life; 7) democractic temper of the society; 8) new forms of cooperation; 9) education for readership; 10) regional and international imbalances; 11) economic efficiency; 12) creativity and purposeful activities.

43 ZAIDI Q H: Teachers' role in curriculum development. NIE Journal 1969, 3(3), 5-11.

Teachers' role in the following major tasks in curriculum development has been discussed: 1) formulation of a guiding philosophy and basic purposes of the curriculum that would provide direction for all aspects of school work - besides State departments of education the responsibility of policy making should also be shared by teachers who would be provided enough spare time for this purpose; 2) translation of objectives and general recommendations into a concrete all-school programme - with the assistance of supervisors or inspectors, the teachers should evaluate all aspects of school life and workout a balanced all-school programme and they should organize themselves with the assistance of the administration into committees to carry on curriculum work; 3) adequate provision of specific aids to teachers - besides using pamphlets, journals, maps etc. for enriching instruction, teachers should be actively engaged in producing a helpful instructional tool, the resource unit which is a collection of suggested activities and materials organized around a given topic or problem; 4) teaching-learning process in the class-room - since content and methods are inseparable, an effective curriculum planning should emphasize teaching procedures, class-room environment and pupil-teacher relationship. Reorientation of school teachers to modern procedures and administrative leadership in the development of pupil programmes of curriculum development have been suggested for the success of school curriculum development.

EDUCATION: GENERAL

44 AZAD B J: Role of State Institutes of Education - inaugural speech on the occasion of the 5th conference of the directors of the State Institutes of Education, New Delhi, 24-26 September 1968. Tamil Nadu Education 1969, 3(1), 3-5.

The institutes, established for training instructors of primary teacher training institutions, providing in-service education to headmasters and inspectors of education departments, supplying expertise, and undertaking survey and research concerning various aspects of elementary education, should be the chief agency for qualitative improvement, especially of elementary education. The progress so far made by the institutions established should be critically evaluated. The conference was urged to recommend suitable measures for the effective coordination of the efforts of the institutes, the Ministry of Education, and the National Council of Educational Research and Training (NCERT) for the growth and functioning of the institutes. It should also consider the issues in the working paper and the resource papers provided by NCERT on in-service training, school improvement and development programmes of the institutes. It is essential to involve the schools in the various programmes of the institutes. The institutes might deal with secondary education if additional resources are available. While reviewing the existing children's literature, improving curriculum and evaluation practices, and producing appropriate literature for pupils and teachers, care should be taken to avoid duplication of efforts between the institutes and the NCERT.

45 INDIA. MINISTRY OF EDUCATION: Education in India 1961-62. Vol. I. Delhi, Manager of Publications, 1963. x, 360p.

The year under review marked the beginning of the Third Five Year Plan. The review supported by statistical data and diagrams covers the following topics: 1) General survey; 2) Educational organization and personnel; 3) Primary education; 4) Basic education; 5) Secondary education; 6) University education; 7) Training of teachers; 8) Professional and technical education; 9) Social education; 10) Miscellaneous: (a) Pre-primary education, (b) Aesthetic education, (c) Education of the handicapped, (d) Education of scheduled castes, scheduled tribes and other backward communities, (e) Education of girls, (f) Physical education and sports, (g) Youth welfare, (h) Scouting and guiding, (i) National and auxiliary cadet corps, (j) School meals, (k) Education of displaced students, (l) Indian students abroad. In the last chapter (Chapter 11) an attempt has been made to study the trends in some selected fields of education as revealed by statistics for the quinquennium ending 1961-62.

46 ISHWAR R C: Changes in pattern of education, a hasty conclusion. Searchlight 31 March 1969, p.4, Cols. 3-6. 2200 words.

Referring to the criticism that there is undue delay in introducing radical educational reforms, it is contended that there is no need to resort to unworthy experiments just for the sake of change. A little reform to control mushroom growth of educational institutions and to deny entry to the undeserving into the institutions would prevent falling standards. Any hasty decision to imitate advanced countries by giving undue priority to science and technology at the cost of humanities would be disastrous.

47 SHARMA G S: Judicial review and education - a study in trends, August 1947-December 1964. New Delhi, National Council of Educational Research & Training, 1969, 39p. 175 ref.

Presents a review of the cases of the Supreme Court and High Courts relating to educational matters falling under the following categories: 1) conflict between regional and national interests - the cases relate to the spheres of action of Central and State governments as specified in the Seventh Schedule of the Constitution. Cases involving the medium of instruction and discrimination among students on the basis of their places of residence figured prominently; 2) public and private interests - the cases are related to: selection of textbooks, working conditions of teaching and non-teaching staff, examinations, education for masses including the special educational facilities for the backward community, and student indiscipline; 3) whether educational institutions are industries and the employees are covered by the Industrial Disputes Act; 4) court's interference in the autonomy of educational institutions.

48 SRIDHARAN T R: 43rd All-India educational conference - some impressions. Educational Review 1969, 75(1), 9-16.

A review has been made of the Conference held in Jaipur (Rajasthan) and the following documents have been reproduced; 1) welcome address of S C Mathur, Minister of Rajasthan State; 2) presidential address by Acharya Jugal Kishore, Vice-chancellor, Kanpur University; and 3) the resolutions adopted at the Conference. Some of the important resolutions are: 1) inclusion of religious and moral education in the curriculum as optional subject; 2) inclusion of moral education and elements of library science and organization in the teacher education programme; 3) giving wider representation to teacher organizations in various administrative bodies of educational institutions; 4) drawing up specially designed syllabi for tribal boys and girls.

49 AGARWAL M C, SRIVASTAVA D N: Role of meaningful distraction on performance with special reference to age and sex difference. Journal of Psychological Researches 1969, 13(1), 43-6. 7 ref.

The objects of the investigation were: 1) to study the role of music as a distractor at two age levels; and 2) to determine whether any sex difference in distraction exists. The sample selected from Agra schools consisted of 30 boys and 30 girls (I.Q. range 110-118) reading in fourth class (age range 8-9.6) and 30 boys and 30 girls (I.Q. range 110-125) reading in eighth class (age range 12.5-14.2). The task performed by the students was substitution test in Hindi and the music used was 8 film songs in Hindi. The findings are: 1) distraction plays significant role at both age levels; 2) at the lower age level there is no sex difference while such difference was noticed at the higher age level; and 3) at the higher age level girls are more distracted than boys, probably because of interpersonal reaction and interest.

50 BHATT L J, JUNEJA S: Social mobility in adolescent boys. Journal of the Gujarat Research Society 1969, 31(1), 48-54.

The object of the investigation was to find out how far the personality determinant (achievement motivation) is present in the upward and downward aspiring adolescent boys. A sample of 320 students (179 urban and 141 rural) reading in secondary schools in Baroda and its surrounding areas was subjected to the investigation. After establishing a criterion for social status, a list of 46 occupations were drawn up. The occupations were graded on a five-point scale by 50 raters belonging to various professions, and the scale value for each occupation was determined. The mobility striving of each student was ascertained by comparing the scale value of the occupation aspired for by the student and that assigned to the occupation of his father. Twentyeight were downward striving,110 stable and 182 upward striving. Eight downward strivers and eight upward strivers belonging to the same places were compared. The two groups were significantly different at 5% level on the n achievement scores which showed that the personality determinant (achievement motivation) is greater in upward strivers than in downward strivers.

51 **GANGULY A K:** Experimental study of the variation in numerical-induction ability among young adults due to institutional environment. Journal of Education and Psychology 1969, 26(4), 252-7. 24 ref.

A sample of 120 boys (age group 13-15) reading in two high schools of Aligarh (U.P.) was subjected to three tests: Vernon's non-verbal 'g' test, Vernon's Arithmetic-Mathematic test, and Trist-Hargreaves concept formation test. The results show that while no variation in 'g' occurs among young adults due to difference in institutional environment, such a variation can be observed in numerical induction ability due to difference in institutional environment.

52 **GANGULY A K:** Relative influence of general intelligence on numerical spatial abilities of boys at the higher secondary level. Psychological Studies 1969, 14(1), 56-9. 17 ref.

A sample of 180 high school boys (age group 13-15) was subjected to the study in order to test the following hypotheses: 1) general intelligence has an influence on numerical-spatial ability; and 2) the extent of influence is statistically significant. Three tests were used to measure general intelligence, numerical and spatial abilities: Vernon's non-verbal 'g', Arithmetic-Mathematic Test, and Pattern Drawing Test. The results indicate that general intelligence is not only higher than both numerical and spatial abilities but it also exerts a significant influence on spatial ability of boys, to the extent that spatial ability proves superior to numerical ability.

53 **GIRISHBALAL DEVI:** Study of anxiety in men and women college students. Psychological Studies 1969, 14(1), 35-8. 10 ref.

Sinha's Anxiety Scale (W.A. Self analysis form) was used to assess the difference in anxiety scores of two comparative groups of male and female students (186 men in the age-group 17-21 and 186 women in the age-group 15-21) reading in post-graduate colleges of Orissa. The scale correlates 73 with the Taylor's Manifest Anxiety Scale (Journal of Abnormal Social Psychology 1953, 48(2), 285), The difference between the scores was 9.30 and C.R. was 6.50, indicating that female students show significantly more anxiety than their male counterparts. This is supported by several other findings of previous investigations.

54 GOYAL R P: Vocational choices of the modern higher secondary school students. Haryana Journal of Education 1969, 2(1), 14-24.

Presents the data collected by administering a survey form to a sample of 433 students (201 boys and 232 girls) belonging to urban (261) and rural (172) areas. The conclusions are: 1) chances are three to one that they have made at least a tentative vocational choice; 2) in terms of indices of vocational maturity, 25% show complete lack of vocational development since they have failed to give any classifiable vocational choice or are still undecided in this respect; 3) the vocations of their choice are on a higher socio-economic level than those of their fathers; 4) factors such as power, esteem, income, fame and independence guide the choice rather than aptitudes, interests, intelligence, level of academic achievement, and employment opportunities; 5) they are more or less unfamiliar with the employment market. Out of about 3600 occupations classified in the National Classification of Occupations, they could think of only 29; 6) most popular occupations were: medicine, teaching, defence services, engineering. Skilled and semi-skilled jobs, and administrative and managerial jobs were least preferred; 7) particularly girls fail to see any relationship between the courses of study that they are pursuing and the occupations that they want to join later in life; 8) girls and rural students are vocationally less developed than boys and urban students respectively.

55 JOSHI J N, HARISH SHARMA: Moral attitudes among the secondary school students in relation to their intelligence and achievement. Education and Psychology Review 1969, 9(1), 42-5. 4 ref.

A sample of 260 students (130 boys and 130 girls) reading in higher secondary schools of Himachal Pradesh was used for the study. The tools used were: 1) an inquiry form consisting of six parts - the first four parts concerned with moral incidents such as honesty, loyalty, responsibility and punishment, the fifth part related to 'ideal person test', and the sixth part aimed at measuring the attitude on the basis of 'morality wicked actions'; 2) Jalota's Group Test of General Mental Ability to determine the intellectual status of the pupils; and 3) scores earned by students in the previous annual examination as a measure of the achievement. The following are the conclusions: 1) direct relationship between moral attitudes and intelligence was noticed. The above-average intelligence group possessed higher and more socially acceptable moral attitudes than the average and below-average groups; 2) the 'ideal person test' indicated that the above-average intelligence group was more interested in politicians, warriors, religious reformers, scientists and writers than the average group. The below-average intelligence group showed high preferences for rich persons, film stars, and dacoits; 3) the above-average group attached more importance to wicked actions destroying humanity or society as a whole, than any other wicked deeds, while the boys and girls in the average group attached greatest significance to sex-relation and treason respectively. Maximum weightage to physical and mental torture was given by the below-average group; 4) in relation to achievement the analysis of moral attitudes revealed that the above-average group stood at a higher rung of the ladder of socially approved moral attitudes than the other groups.

56 KAKKAR S B, JAWANDA J S: Teachers' impact on students. Education and Psychology Review 1969, 9(1), 46-52. 14 ref.

The study was aimed at discovering students' perception of their teachers in terms of the latter's qualities of friendliness, helpfulness, positive and negative influence on student personality. The sample consisted of 53 male and 68 female student teachers of the State College of Education, Patiala (Panjab). The findings are: 1) student teachers generally found their past teachers, judged as a whole, friendly and helpful. Most of them did find one or more teachers who favourably affected their personality development. No teacher affected the personality development adversely; 2) there is no evidence of males and females differing in their reactions given to any of the four propositions; 3) of the twelve reactions given by the subjects, males and females are in close agreement in almost all their reactions (unanimous in respect of five, viz. no adverse influence, friendly, 'helpful to an extent' probably good effect, and definitely good effect, in descending order of frequency.

57 MALHOTRA S: Interpersonal relationship - psychological, sociological and educational study. Allahabad, United Publishers, 1969. xiii, 198. 38 ref. /_ D. Phil Thesis. University of Allahabad_/

The main aim of the study was to investigate the factors underlying the pairings of friends during later adolescence. The sample consisted of 50 pairs of boys and 50 pairs of girls (15+ to 18+) drawn from 20 schools and colleges in Allahabad City. The tools used were: 1) interest inventory; 2) Jalota's Group Intelligence Test; 3) TAT; and 4) sentence completion test. The analysis of the data generally shows that paired friends tend to be: 1) similar in socio-economic status (only economic and caste status, excluding vocational status; 2)similar in language; 3) similar in 'culture and living habits';

4) affected by 'proximity'; 5) attracted by 'behaviour pattern'; 6) attracted by 'studies and intellectual qualities' (girls only); 7) attracted by assertive qualities (girls only); 8) similar in trends of sentiments (girls only); 9) similar in 'Anxiety state' (girls only). Other general conclusions are: 1) all the assumed factors are working equally in both the groups, with minor differences; 2) girls have greater tendency of pairing than boys; 3) mutual relations are guided more by behaviour pattern (e.g., 'disciplined', 'honest', 'truthful', 'helping others' etc.) than by physical appearance; 4) sociological factors are more important than psychological factors in the pairing phenomenon; 5) there is likely to be some unknown factor 'X' which seems to dominate above all the assumed factors responsible for mutual relations.

58 PHATAK P: Behaviour problems of normal school-going boys of ages 7, 8, 9 and 10 years as indicated by parents, boys and teachers. Journal of the Gujarat Research Society 1969, 31(1), 37-42.

The objectives of the study were: 1) to record the incidence of problem behaviour; 2) to study some specific behaviours from the point of view of their appearance and disappearance in the age group under study; 3) to find out whether there are patterns of problem behaviour related to age; 4) to find out whether the pattern changes in the same age group during the year. The sample consisted of 122 children selected from 4 elementary schools in Baroda City (Gujarat). Data were collected using three questionnaires thrice approximately at an interval of 3 months from parents, teachers and boys. The findings are: 1) normal school-going children of seven, eight, nine and ten years of age manifest problem behaviour in various aspects of life; 2) problem behaviour with reference to social standards is most common during the period under study. This may be indicating the period under study as that of learning skills and habits for social adjustment; 3) lying, irritability, quarrelling, fighting, and teasing other boys are highly frequent in all the age groups; 4) the patterns of problem behaviour do not change drastically from age to age or within any age; 5) seven and ten year olds tend to have more problem behaviour specially at the beginning of the academic year. They also have more problem behaviour of personal emotional type; 6) eight and nine year olds are similar in having comparatively less problem behaviour of personal expression; 7) eight year olds have least manifestations of problem behaviour; 8) nine year olds have more problem behaviour than seven and eight year old boys, but their major areas of problem behaviour are school work and school life.

59 **PRAMOD KUMAR**: Reaction to frustration and student leadership. Journal of Psychological Researches 1969, 13(1), 12-15, 2 ref.

The study was conducted to find out if the two groups - the leaders and the non-leaders - differed in their reactions to frustration. The leader group comprised 30 male student leaders who held elective offices in the Allahabad University Student Union during 1966-67. A group of 30 non-leader students was randomly drawn from general student population. The two groups were matched for the factor of education. Muthayya's Madras P.F. study form was used for finding the differential in their reactions to frustration. The results indicate that leaders showed a tendency to stress the presence of frustrating obstacles (obstacle-dominance) in their reactions. The prevailing leadership role agrees with this finding in that it stresses the presence of frustrating obstacles in campus life. The dominance of obstacle, characteristic of existing leadership, serves another purpose. The leaders, by exaggerating the difficulties inherent in campus life, try to make themselves indispensable to the student community.

60 **RAO T S**: Bilingualism and adjustment difficulties. Indian Educational Review 1969, 4(1), 57-66. 8 ref.

The study was undertaken to investigate two hypotheses regarding monocultural bilingual children: 1) they show relatively more problem behaviours than monoglots and to that extent are maladjusted; and 2) the degree of maladjustment is related to their second-language attainment. The sample comprised 226 children (age-group 6-10 years), with Kannada or Telugu as their mother-tongue, drawn from the first five classes of 30 primary Tamil-medium schools of Madras. Relevant information about the subjects was sought from the teachers through an inventory covering school situations and from the parents through an inventory covering home situations. For the first hypothesis, a control group of children with Tamil as their mother-tongue, matched for intelligence, was used. The second-language attainment of the sample was judged by measuring four language skills. The results supported the first hypothesis partially, and did not sustain the second.

61 **SAHADEV M**: Learning and socio-emotional climate of the class. Educational Trends 1969, 3(1-2), 15-19.

The study attempted to examine 1) whether socio-emotional climate of the class taught by the teacher is learner-supportive or teacher-supportive; 2) whether high achievement is related to a pleasant socio-emotional climate in the class; 3) whether children are more self-disciplined in a learner-supportive climate. Teachers' attitude towards classes was determined by interviewing them, their rating of the classes, and observing them in the classroom situation. Students' attitude towards teachers was assessed by interviewing students and administering a questionnaire. The scores of half-yearly tests were used as the measure of student achievement. Students' behaviour was determined from the records, while interest patterns were ascertained by administering a questionnaire. The main findings are: 1) the socio-emotional climate established by a teacher depends on factors like verbal and overt behaviour; 2) a learner-supportive environment inspires students to achieve more; 3) achievement is also influenced by the value perceived in a subject and students' interest in it; 4) achievement in a directly self-rewarding subject depends less on a learner-supportive atmosphere; 5) in a learner-supportive climate, good behaviour of students is less dependent on teachers, and students show greater initiative, attentiveness and interest in class activities; 6) in a teacher-supportive climate, on the other hand, discipline depends more on the presence of teachers, inattentive behaviour increases and students' interests in different subjects are reduced; 7) interest and achievement in a subject are not necessarily highly correlated.

62 SHANMUGASUNDARAM A, FEROZE M: Study of the qualities of leadership among the pupils of some secondary schools. Journal of Educational Research and Extension 1969, 5(3), 100-11. 11 ref.

The objects of the study were: 1) identification of leaders among secondary school pupils; 2) studying different qualities (traits) of leadership as perceived by their followers; 3) understanding the difference, if any, in the qualities of leadership among pupils (including leaders) in urban and rural areas; 4) finding the difference, if any, in the qualities of leadership as perceived by boys and girls. A sociometric test sheet containing questions on seven familiar situations (class leadership, friendship, substitute for teachers, partner for combined study, settlement of quarrels, games leaders and excursion leaders) for breeding leadership qualities was used for the study. Under each situation, both positive and negative approaches were included, and students were asked to name the students and score the relevant item to indicate the reason for the choice. A sample of 287 students (194 boys and 93 girls) studying in Standard X of secondary schools of Coimbatore Education District (Tamilnadu) was subjected to the study. Detailed results have been presented under the following headings: 1) general; 2) qualities preferred by students for selection of leaders in the situations mentioned in the test sheet; 3) qualities that prevent students from becoming leaders; 4) quality of elected leaders; 5) qualities of rejected pupils; 6) socio-economic qualities of leaders and rejected pupils.

Bad copy

63 **SINGHAL S:** Effects of age and education on the general ability of young children. Journal of Psychological Researches 1969, 21-7. 23 ref.

A non-language test battery of general ability was

and an attempt was made to study the differential effects of chronological age and educational classes of children on their general ability as measured by a non-language test battery. The means and standard deviations obtained represent a significant relationship of age and education with general ability. The multiple regression analysis resulted in a multiple R of .73 for the Delhi group and a multiple R of .58 for the Calcutta group. The resulting analysis of variance showed that the contribution of age and education to general ability is significant at .001 level. The contribution of age and education to general ability was found to be equally effective.

64 **SINHA R C:** Study of level of aspiration in introverts and extroverts. Indian Journal of Experimental Psychology 1969, 3(1), 26-30. 17 ref.

The purpose of the study was to find out the difference under three conditions: success, just failed, and failed miserably. The sample consisting of 20 high introverts and 20 high extroverts (age group 17-20) was selected by using the diagnostic test devised by Neymann and Kohlestedt (Journal of Abnormal Social Psychology 1928-29, 23, 482). Letter cancellation sheet was used to test the level of aspiration. The results show that extroverts have higher aspiration level than introverts. Extroverts have very low discrepancy score (either positive or negative), indicating that they are in touch with the reality in comparison to introverts who have very high discrepancy score (positive or negative). There is no conclusive proof that extroverts have more shifts than introverts. During the 'success' condition the shifts of both the groups are the same, but under 'just failed' condition the extroverts have more shifts than the introverts, and under 'failed miserably' condition the introverts have been shifts than the extroverts. The major lowering of aspiration level of extroverts occurs during 'just failed' condition and in case of introverts it occurs during 'failed miserably' condition. The aspiration level is affected more during 'failed miserably' condition than 'just failed' condition.

EDUCATIONAL RESEARCH

65 PARICHAYA Pseud. : Educational research and training. Economic and Political Weekly 1968, 3(32), 1243-6.

The drawbacks of the research activities of NCERT have been discussed and corrective measures suggested. Since no significant contribution has been made by the Adult Education and the Basic Education departments, they should be abolished. As regards collaborative research no work of national significance has been done, except the project on Sociology of Education. Instead of getting research proposals from research workers efforts should be made to involve well-known researchers in schemes of national significance. Mostly, research problems are oriented to the needs of foreign countries where Indian researchers took training. Instead, a list of priority projects relevant to the Indian situation should be drawn up. Concentration on investigations relating to schools in Delhi or its neighbourhood should be avoided and the activities should be spread all over the country in order to obtain decisive results of national importance. The preparation and publication of model textbooks based on modernised syllabi, usually in English or Hindi, should be followed by a corresponding change in schools in other linguistic regions. Some workshops should be followed up at the State and sub-State levels and seminars should be more purposeful and useful. The main activities of NCERT should be directed towards bringing about improvement at the mass base and not merely at the affluent classes. State Councils of Educational Research and Training should be established and the State Institutes of Education should be strengthened for supplementing and carrying forward the activities of NCERT at the State level. The cost of producing a secondary teacher in a four-year course at the Regional College of Education (NCERT) has been estimated at Rs.25,000.

EDUCATIONAL SOCIOLOGY

66 AIRAN J W: Principal as an academic and social leader in the college community. (In Mathias T A, Ed. Education and social concern. Delhi, Jesuit Educational Association of India, 1968. 81-8)

As an academic leader, the principal should make proper choice of students and faculty members, promote new methods of education, and provide advice and guidance to new members of the faculty. He should share the administrative responsibility with his colleagues to enable him to function as an academic person. As a social leader he should ensure the achievement of the main objective of liberal education i.e. making students into functioning and responsible adults. Along with his colleagues he should evolve programmes to secure adequate personal and social development of the majority of his students. Constant efforts should be made to identify and foster the various potentialities of the students. Students have to be trained in democractic traditions also. He should identify people in the community who would help him in promoting these objectives.

67 HEREDERO J M: Social function of a college in a developing society. (In Mathias T A, Ed. Education and social concern. Delhi, Jesuit Educational Association of India, 1968. 100-15.)

The most important functions of a college in a developing society are: 1) creation of proper living conditions for the people; 2) accelerating the process of transformation of a traditional society into a modern one; 3) helping in the development of science. Stress has been laid on motivating students to achieve, and creating in them, a healthy nationalism and an understanding of the need for economic growth. The college can help to work out a synthesis between worthwhile traditional values and modern materialistic values. It is suggested that material and personnel resources should be concentrated so as to establish an institution of international standard. Such an institution would make a unique contribution to the development of science.

68 LOCKE J K: Role of the faculty in creating and developing a social conscience in the school and community. (In Mathias T A, Ed. Education and social concern. Delhi, Jesuit Educational Association of India, 1968. 89-99).

Stresses the role of the faculty in the systematic formation of social conscience in the young. Given proper and relevant instruction and opportunity to exercise themselves in their social contacts with boys of different social background within the school, students will correct their social outlook and form a correct conscience. The pre-requisite is a proper social conscience in the faculty members othemselves. This could be achieved through seminars and social cooperation in school and outside. Every subject taught in the school should be made relevant to students by showing its relation to their real life. Extra-curricular activities such as debates and dramas also contribute to the development of social sconscience and besides benefiting the pupils, would have an impact on the community.

69 **MIRANDA H**: Education for responsible participation in a democratic society. (In Mathias T A, Ed. Education and social concern. Delhi, Jesuit Educational Association of India, 1968. 122-30).

Education in a democractic society should consider the child not merely as an individual but as a member of the community. This calls for a change in some of the traditional concepts of the organization of school and college life. For example, emphasis should be on cooperation rather than competition, shared activity should replace passive recipiency, and concern for the common good should prevail over the pursuit of individual excellence. Suggestions are: 1) inculcation in students an awareness of the life and problems of the community; 2) extending some school services to the community; 3) encouraging students to take interest in activities like National Savings Scheme, National Defence Fund; 4) ensuring effective parent-teacher collaboration; 5) associating student councils in the planning and control of activities concerning students' life in the institution.

70 **MURICKAN J**: Education for responsible participation in a democratic society. (In Mathias T A, Ed. Education and social concern. Delhi, Jesuit Educational Association of India, 1968. 122-30).

Education should inculcate in students democratic values like freedom, equality of man, reverence for the human person, responsibility for others, and respect for law. Opportunities should be provided to students for exercising themselves in these values in different ways. Some suggestions in this regard are: 1) development of intraschool relationships for creating opportunities for sharing common interests; 2) arranging debates and discussions, seminars and workshops; 3) fostering the sense of responsible participation in every undertaking the students can enter into; 4) ensuring dialogue between teacher and student, between staff and management, and between educational institutions and parents; 5) involvement of school and college in the life of the local community for expanding and enriching the democratic aspirations of students. Involvement in the community life could be achieved through different programmes e.g. conducting surveys to study the socio-economic problems of the surrounding people, discovering their special needs, organizing service projects to help them tackle their problems, giving leadership to the community in forming civic organizations.

71 RUHELA S P: Traditional values of the Indian society and college students. Indian Educational Review 1969, 4(1), 135-62. 112 ref.

Reviews the significant studies in the sociology of students' values in India and reports an empirical study conducted by the author on a sample of 100 undergraduate and postgraduate students (59 boys and 41 girls) drawn from arts, science and commerce colleges and technical institutions in Delhi. The purpose was to find out which of the traditional values of Indian society have become ineffective and which still have a hold on the beliefs and behaviour of college students in Delhi. A check-list containing 13 value statements collected from the writings of sociologists, social anthropologists, philosophers, historians, indologists, and political thinkers, covering the following aspects, was administered: organic, economic, recreational, associational character, intellectual, aesthetic and religious values. The major findings are: 1) in regard to several values, significant differences in beliefs and practices exist between boys and girls; 2) although students realize that some traditional values are now getting out of date, they are still under the powerful hold of the traditional values; 3) students do not disregard some traditional values which are the summum bonum of Indian culture, contrary to the opinion expressed by social scientists.

EXAMINATION AND EVALUATION

72 ANANTAKRISHNAN S V: Semester system in colleges, pre-conditions necessary for its success. Mail 6 March 1969, p.4, Cols. 4-6. 1344 words.

Introduction of the semester system calls for granting academic freedom to individual institutions to introduce curricular reforms and to evaluate students' work. Since the essential feature of the system is an even distribution of the workload of a student and periodical assessment, adequate time should be given to students for self-study. Examination reform is closely related to the system. In the ultimate evaluation, the assessment of day-to-day work and terminal examination, work in tutorials, seminars and practicals should all be given appropriate weightage. Introduction of day-to-day assessment will take care of attendance problem. While a minimum number of courses and a minimum level have to be insisted, the duration of the course should be flexible. A common pattern and a common medium of instruction - English - would facilitate easy mobility of students and teachers from one institution to another. The system may be extended to part-time students.

73 COUNCIL OF SCIENTIFIC AND INDUSTRIAL RESEARCH. DIVISION OF SCIENTIFIC AND TECHNICAL PERSONNEL: Gradings in university degrees. Technical Manpower Bulletin 1969, 11(3), 1-3.

The following data have been presented: 1) award of class I, II, and III in Masters' degrees in arts and sciences (1959-1966); 2) award of first class grade (1965-1966); 3) classes awarded in Bachelors' degrees (1964-1965); 4) classes awarded in Bachelor of engineering and technology (1956, 1961 and 1965). Some significant facts are: 1) at the Masters' degree level (a) the percentage of students getting first class grades is higher in science (29.4%) than in arts (5.5%); (b) the percentage of students ranked as third class is higher in arts (47%) than in science (14%); and (c) the percentage of recipients of first class grades is increasing, while that of third class grades is declining, both in science and arts; 2) during 1965 and 1966 the percentage of recipients of first class grades was as high as 75% in Visva-Bharati and 60% in Delhi University; 3) at the Bachelor's degree level 13% got first class grades (BA/B. Com 1%), 41% second class (BA/B Com 24%) and 46% third class (BA/B Com 75%); 4) in the engineering examination the percentage of students getting first class grades is lowest in civil engineering (19%). The percentage in the other branches is 35.

74 DAVE R H, MISRA R G: Examination reforms. Vigyan Shikshak 1969, 13(1), 56-9.

Describes the examination reform programme of the Department of Curriculum and Evaluation (DCE) aimed at: 1) improving the external examination system and internal evaluation procedures in school; 2) using evaluation techniques for improving teaching and learning; and 3) developing suitable manpower for introducing examination reform at all stages of education. The programme of reform in external examinations is being implemented in different States in three phases: 1) preparatory work of 2-3 years' duration, in which the teachers, papersetters and examiners in selected subjects are trained in new techniques of evaluation; 2) use of improved question papers in selected subjects; 3) extension of the programme to other subjects. Other measures are: 1) orienting teachers to the internal evaluation approach, and developing test pools by different States for internal evaluation; 2) preparation of teaching units and handbooks for objective-based teaching and testing for the guidance of teachers; and 3) organizing short-term and long-term training programmes for officers of State Boards of Secondary Education, State Evaluation Units and teacher educators.

75 GUPTA K S: Modern trends in examination. Bulletin of the West Bengal Headmasters' Association 1969, 18(3), 85-90.

A good evaluative tool has two significant values: 1) measurement or metrical value; and 2) pedagogical value. The existing examination system takes into account mainly the metrical aspect of examination and measures only some of the cognitive and conative domains. The recommendations of the Secondary Education Commission (1952), Seminar on Examination Reforms (Bhopal 1956) and the Education Commission to improve the examination system have been discussed. The following points are revealed: 1) external examinations, which help the comparison of standards of different schools cannot be abolished but their number should be reduced to the minimum; 2) they need modification by introducing short-answer tests and objective tests; 3) alternative questions which affect the validity and reliability of the test should be judiciously minimized; 4) curriculum, teaching methods and examinations are interrelated; 5) internal assessment should be given increasing importance.

76 JOSHI J N, KISHAN SINGH: Study of internal assessment in the higher secondary examination of the Panjab University. Journal of Education and Psychology 1969, 26(4), 238-43. 2 ref.

The objects of the investigation were: 1) to study the significant trends of internal assessment [25% weightage is given to internal assessment] in relation to external assessment; and 2) to find out whether significant differences exist between two assessments in relation to sex and types of school (government and non-government, or boys and girls). The conclusions are: 1) significant correlation exists between internal and external awards indicating that at least some of the similar abilities are evaluated by the two systems, if not all; 2) internal assessment explained two factors, viz., (a) general educational factor, and (b) mathematical factor, taking 85% and 15% of the common factor variance respectively. External assessment accounted for three factors, viz., (a) general education factor; (b) verbal factor, and (c) mathematical factor, taking 75%, 15% and 10% of the common factor variance respectively. Although internal and external assessments do not exactly measure the same quantities, and although the contribution of variances is also uneven, there seems to be conspicuous agreement regarding the first factor between the two systems; 3) analysis of variances reveals almost similar picture of the two systems. The variations due to the variables of sex, school and subject are not significant in internal system, whereas, in case of external system sex and sex by subjects have accounted for the significant variations in the attainments; 4) significant differences exist between internal and external awards for each subject.

77 MISRA V S: Study of the effect of randomization and scaling on the errors in examination marks. Gauhati, the University (Examination Research Unit, 1969. 9p. 6 ref.)

The results of the students who appeared in the Part I English examination of the three-year degree course of the Gauhati University in 1965 (85 students) /_ old system_/ and 1967(163 stus.)/_ new system_/ were considered in the study. Randomization and scaling (Taylor H J. Operation passmark - an account of the methods used in the Matriculation Examination of 1963. Gauhati, the University, 1963. 27p) were employed in 1967. Each student had two assessments - one internal (by the college) and another external (by the university). The difference between the two marks was considered as the 'error'. The results are: 1) the range of internal and external assessment marks differed considerably (both in the minimum and maximum marks, and the average marks) in the old system. Two sets of marks were almost identical in the new system; 2) errors in marks had been reduced by nearly 50% by randomization and scaling; 3) the chances of students who could have passed, but failed, were much greater in the old system. The reverse is also true; 4) the agreement between the internal and external assessment had increased by 2.5 times in the new system.

78 NATIONAL COUNCIL OF EDUCATIONAL RESEARCH AND TRAINING. DEPARTMENT OF CURRICULUM AND EVALUATION: Report on oral test. Cenbosec News and Views 1969, 5(1), 9-11.

Describes an experiment involving 500 students of the one-year higher secondary course of the Central Board of Secondary Education, conducted by the Department in 1968. The experiment was preceded by three try-outs to examine the feasibility of the procedure developed by the Department, and to find out its validity, reliability, objectivity and practicability. The testing procedure consisted of three steps: 1) informal conversation to establish rapport between examiners and candidates; 2) answering 3 short questions; 3) a short speech on a topic to be selected from a list of three given to the candidates 5 minutes before the examination. Examiners assessed the students independently and discussed among themselves to resolve differences in the scores. The conclusions are: 1) inter-examiner reliability reflects the reliability of the procedure, test material and rating scale; 2) scores obtained by students did not give any disadvantage or disproportionate advantage in respect of the final gradings.

GUIDANCE AND COUNSELLING

79 DOSAJH N L: Guidance movement in India. Haryana Journal of Education 1969, 2(1), 40-7.

Presents a brief history and activities of the following important institutions of guidance in India: 1) Bureau of Psychology, Allahabad; 2) State Bureau of Educational and Vocational Guidance, Mysore; 3) State Bureau of Educational and Vocational Guidance, Bikaner (Rajasthan); 4) Institute of Vocational Guidance, Bombay; 5) Gujarat Research Society, Bombay; 6) Bureau of Vocational and Educational Counselling, Calcutta; 7) State Bureau of Educational and Vocational Guidance, Chandigarh; 8) Central Bureau of Educational and Vocational Guidance, Delhi; 9) State Bureau of Educational and Vocational Guidance, Hyderabad (AP); 10) Educational and Vocational Guidance Bureau, Patna; 11) State Bureau of Educational and Vocational Guidance, Shillong (Assam). Also lists the tests developed by these institutions, and the guidance publications produced by them.

80 NARULA K S: Effective counsellor. Educational Trends 1969, 3(1-2), 38-42, 8 ref.

The following essential qualities of an effective counsellor have been discussed: 1) a warm and genuine interest in pupils; 2) leadership in organizing programmes; 3) insight into human relations; 4) ability to work in cooperation with others; 5) emotional stability; 6) patience; 7) confidence; 8) understanding of problems and opportunities for guidance, responsibilities and pupil-teacher relationships; 9) understanding of social and economic conditions.

81 PATEL A S: "Case study" technique - its essentials, uses and limitations. Journal of the Gujarat Research Society 1969, 31(1/121), 12-36. 6 ref.

Case studies in educational institutions should be used primarily as a basis to a better understanding of students, whether educationally retarded, average or even gifted, to enable the teacher to provide the right type of instruction and guidance. The essential steps involved in preparing case studies have been discussed. The first step is the collection of all possible information about the student from all possible sources, and then presenting the data in an organized manner under the following heads: 1) identifying data; 2) introduction to the problem; 3) family data; 4) physical health data; 5) educational history and achievement; 6) objective test data and interpretation; 7) social development; 8) emotional and personal development;; 9) vocational experiences; 10) progress of counselling; 11) recommendations; 12) follow-up and treatment. Interpreting the data collected is the next step for unfolding the total personality of the student. The results of interpretation should lead to the last essential step of the case study, treatment and follow-up. The different uses of case study are: 1) research; 2) counselling as a basis for diagnosis and treatment of a special problem; 3) study of non-problem cases and helping the subjects to develop properly; 4) general purpose of increased understanding. The three common shortcomings of many case studies are: 1) limited scope, picturing the student as a class member rather than as a total personality; 2) non-utilization of some important sources of information; 3) study often based on superficial inquiry. A sample case study has been presented.

HEALTH CARE

82 GAUR S D, MARWAH S M, RAJSHREE: Nutritional status of medical and nursing students of Banaras Hindu University. Indian Medical Gazettee 1969, 8(11), 47-58.

The study covered the following aspects: 1) environmental factors; 2) socio-economic factors; 3) gastro-intestinal complaints and stools survey; 4) nutritional survey; and 5) diet survey. All the 193 male medical students, 52 female medical students and 63 nursing students residing in the university campus were subjected to the study. The findings are: 1) the environmental hazards in terms of water contamination, poor mess hygiene and untrained, unimmunised and unchecked foodhandlers were high in all the hostels; 2) the nursing students came from comparatively poorer families, had more gastro-intestinal complaints and higher percentage of positive stools, showed higher percentages of vitamin deficiences and consumed poorer diets; 3) all the diets were deficient in proteins, calcium, phosphorus, vitamin A, thiamin, riboflavin and vitamin C. The diets showed excess of roots and other vegetables, and iron (vegetable sources). The nurses' diet showed excess of cereals, and deficiency of oils or fats and iron. The female students took the highest amount of pulses.

83 DUBEY V S: /Madhya Pradesh/ University Bill. Hitavada 6 January 1969, p.4, Cols. 3-6. 840 words,

The bill is criticized on the following counts: 1) creation of a post of Chancellor with no work, while the Governor of a the State is named as Visitor; 2) a superfluous post of Rector to be occupied by a government official. This is a violation of university autonomy; 3) provision of only 5 elected members from registered graduates constituency out of 100 members of the university court. Court would be dominated by government officials and ministers; 4) provision of an executive council consisting of 9 teachers and 1 elected member. This would give absolute power to the vice-chancellor.

84 EZEKIEL N: Collapse of education. Times of India 5 January 1969, p.6, Cols. 5-6. 660 words.

Although education at all levels has been the most widely discussed topic and many suggestions for improvement have been made, the same old system continues. One of the reasons is the insistence on single solutions viz., uniform syllabus, lectures, textbooks, examinations and degrees for all students differing widely in educational background and acquaintance with the medium of instruction. The immediate need is for a variety of educational institutions and levels, catering to students according to their requirements. Higher education can be meaningful only if the following conditions are fulfilled: 1) reasonable admission policy which cannot obviously satisfy all; 2) suitable courses at various levels; 3) diversified modes of evaluating the performance of students so that the emphasis on examinations is eliminated; 4) intellectually active staff; 5) the right and the power to insist on the realistic standards that are set up.

85 INTER-UNIVERSITY BOARD OF INDIA AND CEYLON, NEW DELHI: Universities handbook - India and Ceylon. New Delhi, the Board, 1969. xi, 908p.

The 15th edition of the handbook covers 69 universities, 10 institutions deemed to be universities and 5 Indian Institutes of Technology, besides 3 universities of Ceylon. The universities/institutions are arranged alphabetically and the following information is presented: 1) officers of university; deans of faculties; brief history; jurisdiction; constitution; medium of instruction; library, laboratory and research facilities;

scholarships and fellowships; private or external studies; academic year; budget estimates; special features; miscellaneous information; courses of study degrees, diplomas and certificates awarded; list of affiliated colleges, names of teachers. No information has been provided in respect of K S Darbhanga University. Three other universities are still in the process of being set up and do not have any precise information to communicate A.P. Singh University, Rewa (Madhya Pradesh), Maharashtra Agricultural University, and University of Calicut. An index contains references to subjects and courses at the degree level.

86 LULLA B P: Problems of post-graduate studies in India. University News 1969, 7(3), 13-14.

The following defects are pointed out in postgraduate (P.G.) studies in India: 1) lack of clarity in the objectives of teaching; 2) paucity of resources both human and financial; 3) absence of separate dean or director of studies for coordinating the activities of different departments; 4) absence of a central coordinating authority similar to UGC for academic matters at the PG level; 5) absence of innovation in curriculum, teaching methods and learning experiences; and 6) outmoded examination system. Problems relating to research are: 1) absence of quality research in most disciplines except a few exact sciences; 2) lack of applied research; and 3) duplication and stagnation in research due to the absence of a central coordinating agency. The suggestions are: 1) separate administrative unit for PG studies; 2) proper selection of students; 3) proper selection of qualified and experienced teachers for teaching and research guidance; 4) remodelling PG courses in view of the new needs of Indian society and fresh advances in knowledge; 5) provision of choice of courses according to the students' special interests; 6) continuous evaluation of students; 7) liberal financial assistance for PG studies; 8) preparation of high level textbooks; 9) provision of special facilities in libraries and laboratories; 10) creation of a coordination centre responsible for documentation work.

87 SAYEED B A: Extension of free education for all in PUc untimely. Mail 14 March 1969, p.4, Cols. 3-6. 2040 words.

The proposed extension of the existing restricted scheme of free education at the pre-university level has been opposed on the following grounds: 1) primary need is the fulfilment of the constitutional obligation of providing free and compulsory education up to the age of 14; 2) providing free education to students of the richer section of the society is unjustified; 3) unlimited proliferation would affect the standard of education and discipline in colleges; 4) besides being an infringement on the autonomy of privately managed institutions there would be undue strain on their resources; 5) introduction of two-year pre-university course would put greater strain on the economy of the State. Instead of this scheme introduction of a programme liberal scholarships, stipends, studentships and fellowships for poor and meritorious students has been suggested.

INSTRUCTION MATERIAL AND AIDS

88 KOTHARI D S: Incentives for production of university level books in Indian languages. Hitavada 23 January 1969, p.4, Cols. 3-6. 1070 words.

Production of university level books in Indian languages should be considered as an integrated national programme for the change-over in the medium of instruction to the regional languages. An all-India organization should mobilize suitable authors, scientists, subject experts and college teachers for writing standard books in different languages. The books to be produced could be either original or translations of standard books in foreign or Indian languages. The following types of incentives should be given to the authors and translators participating in the programme: 1) giving academic recognition to the work of teachers who produce standard textbooks, and considering such matters for recruitment and promotion; 2) providing lump sum grants varying between Rs.5,000 - 10,000 to teachers on successfulproduction of a standard textbook; 3) offering technical and ministerial assistance for writing books; 4) awarding prizes to the authors of the best university standard books in different subject fields in a particular year.

89 Quality textbooks at low cost /News Item/: Hindu 9 March 1969, p.6, Cols. 1-6. 1280 words.

Presents information about National Board of School Textbooks set up in accordance with the recommendations of the National Integration Conference (Srinagar, June 1968), with the Union Education Minister as Chairman and the State Education Ministers and 16 educationists and experts in book production as members. The National Council of Educational Research and Training would provide the necessary academic services to the Board. Three printing presses, each dealing with a group of Indian languages, would be set up in Mysore, Chandigarh and Bhubaneswar, with the technical assistance of West Germany. The major issues to be tackled by the Board are: 1) maximum utilization of the presses. Some experts suggest that these presses should be utilized for the production of books for primary schools to overcome the shortage of instructional material causing wastage at that level. Private presses could be engaged in producing secondary level books; 2) reorganization of administrative machinery at the State level to facilitate textbook production. An independent, autonomous organization would be more effective than a departmental bureau. Each State should have its own printing arrangements;3) provision of free textbooks at the primary level. In the long run the Board might have to extend its activities to the college level. The working of a scheme of financial assistance initiated two years ago, envisaging Central assistance of Rs.10 million to each State with matching grants from the States should be reviewed to ensure adequate supply of low-cost and quality textbooks to college students.

90 RAHMAN S: Pre-requisites for the use of films in education. Indian Journal of Adult Education 1968, 29(12), 7-8. 10.

Discusses the steps to be taken for ensuring the three prerequisites for the use of films in education: 1) availability of films; 2) establishment of a net-work of film libraries containing multiple prints; 3) training of personnel in the use of films. Since educational films are not produced in India, a careful selection of films available in other countries should be made and dubbing rights in Indian languages secured. Besides, such films should be produced which would be useful both at secondary school and adult education levels and would promote scientific attitude in the common man and carry the message of modernization. A national film centre should be established to meet the requirements of universities and colleges, as a first step towards the establishment of film centres in each university. At least one central scheme for the training of instructional film personnel should be organized. The need for popularizing projection facilities and projection equipment at mass level has been stressed.

91 Textbook scandal /Editorial/ Times of India 20 January 1969, p.8, Cols. 1-2. 600 words.

Deploring the publication of a textbook, now widely used in UP, which contains disparaging references to a particular community, the editorial endorses the recommendations of a Committee of the Union Education Ministry that in writing history textbooks, care should be taken to highlight only such facts as would produce a healthy effect on the minds of children. The following suggestions are given: 1) thorough overhauling of the entire machinery for the selection of textbooks; 2) setting up an inter-State board of experts to deal with textbooks other than those on regional literatures. Identical textbooks in subjects like history, geography or chemistry could be used in all the States; 3) approving several alternatives and leaving the final choice of textbook to the school board; 4) allowing private publishers to participate in the programme. Instead of expecting the National Council of Educational Research and Training to devise books to suit their different needs, the States should agree on common syllabi in non-language subjects.

LANGUAGE PROBLEM

92 **INDIA. MINISTER OF EDUCATION, 1967-69 (T Sen): Medium of education - change-over to Indian languages. Hitavada 23 January 1969, p.2, Cols. 6-8; p.5, Cols. 1-3. 3055 words.**

The need for a planned and smooth change-over to Indian languages as media of instruction in higher education has been stressed. The suggestions offered are: 1) following an elastic and gradual approach for the change-over; 2) simultaneously strengthening the study of English; 3) evolving a programme for the production of textbooks in all Indian languages. The change-over should not be delayed till all the required books are produced, and the books prescribed for university courses should be in any language, Indian or foreign, if found useful; 4) establishing special centres of higher learning which adopt both Hindi and English as media of education for preserving unity among the intelligentsia.

93 **JOHN V V: Education and language policy. Bombay, Nachiketa Publications, 1969. 79p.**

The book is a collection of seven articles - 3 lectures and 4 articles published in national dailies. The first article entitled "Road to Babel" stresses that instead of compelling pupils to learn languages according to the political whim, language proficiencies beyond the mother tongue necessary for different categories of services should be indicated. Similarly universities should indicate the languages necessary for pursing higher studies. The second article dealing with the mother tongue in schools and universities suggests that a well-designed school curriculum in the mother tongue should be drawn up to introduce the students to the joy of learning and to cultivate in them intellectual self-confidence At the undergraduate stage two alternative suggestions have been made: 1) prescribing minimum proficiency in comprehension and communication; 2) making the syllabus in the mother tongue the means to impart all that is meant by "general education". The third article discussing the national language policy makes a strong plea for the adoption of the mother tongue as the medium of instruction to faciliate comprehension, self-expression and communication. However, the study of English, which is essential for having access to modern knowledge, should not be ignored. In the fourth article entitled "Language in a pressure cooker", adoption of new plan had been recommended according to which the compulsory study of 3 languages should be completed effectively during the school period. Any enforcement of the three-fold skill in languages for entry into public service requiring university degrees should be deferred till the first batch of school-leavers take their degrees. A crash programme should be adopted during the transitional period of 12 years. The next two articles discuss the benefits of learning English and Sanskrit. The last article describes the language problem of Belgium.

LITERACY

94 BUTT H: Communication of scientific knowledge to village people - the need for functional literacy. Social Action 1968, 475-80.

The need for functional literacy among villagers for the communication of scientific knowledge has been stressed, and literacy work has been recommended as significant. The communication media generally used in extension work are: 1) demonstration; 2) verbal contact; 3) visual and audio-visual aids. These methods serve mostly the motivational ends and are inadequate for conveying adequate scientific knowledge. They are not available to the villagers at their convenience, and do not meet individual abilities and requirements. Since they are not available on a continuing and repetitive basis, reinforcement and recall are extremely limited. On the other hand, printed literature has the following advantages: 1) it would fulfil its purpose more effectively and would also permit of more imaginative and creative use of other extension methods; 2) it would supplement and elucidate what may be only particularly or even erroneously conceived through other media; 3) it is not only the most effective way of assuring understanding and facilitating the retention of information, but is also the most efficient and economical means of reaching the villagers.

PHYSICAL EDUCATION

95 D'SOUZA D: Promotion of physical education in elementary schools. Vyayam 1969, February, 12-15.

The play way in education has been devised because educational experience at the primary stage is sense-experience attained through imitation, emulation and dramatization. Activities used for this purpose should be carefully selected and graded to suit growing children. Individual attention should be given to teaching skills so that differences in capacity of the children do not lead to discouragement and frustration. The following pattern has been suggested: 1) first year: importance given to activities such as mimetics, story plays, dramatics; 2) second standard: continuation of the previous programme and gradual introduction of changed forms of activities; 3) third standard: simple group games of low organization involving elementary skills and self-testing students and mimetics, story plays and dramatics; 4) fourth standard: activities involving strength, speed and skill, taking care to avoid fatigue. The classroom teacher, properly oriented, should undertake the teaching assignment.

96 PANDA S: Need for physical education and its aims. Teaching 1968, 41(2), 58-60.

The emphasis should be on training in agility, poise and good posture. The aim of physical education should be: 1) developing in children an appreciation for exercise and fresh air; 2) stressing the importance of group interests over personal gain; 3) increasing child's power of resistance to minor ailments; 4) providing an outlet for self-expression facilitating emotional development. Physical activities in a wholesome environment would develop the physical, mental, moral and emotional health of the child and enable him to face the problems of life courageously and successfully. The three important factors in physical education are: freedom, non-interference and self-expression. The child should be allowed to experiment, invent and choose his activities freely.

POLICY AND PLANNING

97 AGARWAL S P, PRAKASA RAO M S: Manpower approach to the new Fourth Plan. Education Quarterly 1969, 20(1), 22-6.

The major considerations for a feasible manpower planning are: 1) planned development should not be allowed to suffer for want of manpower of requisite skill and category; 2) qualitative improvements should be stressed with a view to ensuring manpower development and utilization leading to higher productivity; 3) educational and training policy should be harmonized with the occupational requirement of industrial activity and technology; 4) motivations and mobility of the labour force, and distribution of incomes and expenditures should be so oriented as to bring about job satisfaction and savings in the economy.

These considerations call for a close and effective coordination of policies in the fields of population, education, economic development, and manpower.

98 BOSE J D: Jamshedpur - case for an expanded theoretical framework to integrate education, society and productivity. Indian Educational Review 1969, 4(1), 34-43. 14 ref.

The causes of labour unrest in 1958 in the Tata enterprises at Jamshedpur have been analyzed in the context of the transformation of workers belonging to rural areas into a modern industrial and urban community. In spite of the introduction of a number of progressive reforms such as health, housing, measures for civic improvement, and sanitation, the educational system adopted by the authorities failed to provide workers with the social and emotional skills necessary for urban living. As a result they remained an easy prey to unscrupulous politicians. It has been suggested that there should be greater participation of workers in local councils responsible for drawing up educational policy. Vocational-centred training courses should be widened to include more general and academic subjects. This would provide opportunities for the development of a commitment to the local community. Planners and educators must not only fit an educational scheme to a particular economy but must also be able to predict consequences in a sophisticated framework combining the insights of education, psychology and other social disciplines.

99 DATTA S K: Job for jobless engineers. Statesman, Calcutta 28 March 1969, p.11, Cols. 2-5.1932 words.

Freezing the expansion of technical education would not solve the employment problem of engineers, and any injudicious decision to slow down the rhythm of technical education would be disastrous. The current annual output of 35,000 technical persons could be absorbed in the following manner: 1) 10% of the engineering graduates in teaching and training institutions by making the teaching profession more attractive; 2) 15% in research and developmental activities in various laboratories, and research associations; and 3) a substantial percentage in the agricultural sector. This, however, calls for proper planning and implementation.

100 **KHAN Q U**: Statistics for educational planning. Manpower Journal 1968, 4(3), 41-62.

Sources of educational statistics in India are: 1) Ministry of Education; 2) University Grants Commission; 3) National Council of Educational Research and Training; 4) Census of India; 5) Directorate General of Employment and Training; and 6) other sources. The methodology of collection of data and their nature have been briefly described. An annotated list of publications containing educational statistics has been given. Some significant gaps in the existing statistics are: 1) data collected by different agencies adopting varying concepts and different reference periods are not comparable. Considerable overlapping is also noticed; 2) unusual time lag between collection and publication of data; 3) non-availability of separate data on fresh entrants, repeaters, and dropouts needed for estimating wastage and stagnation rates; 4) non-inclusion of information in the statistics on educational expenditure on budgetary provisions and parental expenditure; 5) non-availability of adequate data on the cost of institutional and in-plant training; 6) problem of equivalence of different examinations. The suggestions are: 1) allocation of the collection of different types of statistics to different organizations to avoid duplication; 2) casting direct and indirect educational expenditure by stages and types of education; 3) classifying the data on teaching and other staff by length of experience and salary groups; 4) presentation of statistics on educational out-turn (postgraduate level) by subjects and specialities; 5) classifying out-turn by rural and urban areas; 6) collection of data on foreign-trained personnel; 7) collection of comprehensive data on institutional and in-plant training.

101 **KHARE G P**: Statistics for educational planners - statistical techniques, New Delhi, Asian Institute of Educational Planning and Administration, 1968. 109p. 15 ref. / Mimeographed /

The primary object of the publication is to make the educational planner familiar with the method of collection, compilation, tabulation, presentation, and interpretation of data, so that he can have a better rapport with statisticians. The contents are: 1) statistics and statistical process; 2) collection of statistics - planning the study, devising the questions and making the schedule, selection of the samples, using the schedules, organizing the data, making finished tables and charts, analysis of the findings; 3) frequency distribution; 4) graphic presentation - diagrams and charts, pictographs and statistical maps; 5) measure of central tendency - arithmetic mean, weights, geometric mean, harmonic mean, median, mode; 6) measure of dispersion-range, semi-interquartile or quartile deviation, average deviation, standard deviation; 7) sampling - design of the survey pilot surveys, selection of samples, different types of random sample surveys, estimation of population characteristics;8) rates, ratios and index numbers.

102 ORISSA. PLANNING AND COORDINATION (EVALUATION) DEPARTMENT: Study on the pattern of utilization of educated persons. Bhuvaneswar, the Department, 1968. vi, 181p.

The study undertaken at the suggestion of Planning Commission covers the candidates who passed graduate, postgraduate and diploma level examinations in 1963. Of the 650 candidates contacted (out of 1983 successful candidates), 38.5% responded (response of diploma-holders was 80.4%). Only 10.8% obtained first class. The major age-group was 20-25 (54%). An analysis of the responses has been presented under the following headings along with necessary statistical tables (193): 1) background of the respondents; 2) activity status; 3) status and mode of recruitment; 4) salary; 5) job preference; 6) unemployed respondents.

103 Rs.809 crore outlay for education during Fourth Plan [news item] Times of India 30 January 1969, 9, Cols. 1-2, 930 words.

The outlay for education had been fixed at Rs.8090 million (central sector 2590 million and State sector 5500 million). Sector-wise allocations are: elementary education 2178.7 million, secondary education 1262 million, university education 1817.6 million, social education 100 million, technical education 1201.0 million and others 1199.7 million. Enrolment targets at the end of the Plan period are: primary level 68.27 million, middle level 18.45, secondary level 10.37 million, higher education 2.66 million, technical education (degree and diploma) .073 million. Some of the significant programmes are: 1) ensuring primary and middle schools within easy walking distance from each village; 2) extension of secondary education to under-developed zones; 3) no further establishment of institutions of higher education outside the university system; 4) establishment of State boards for the expansion and improvement of teacher education; 5) establishment of a national staff college for educational administration; 6) constituting a social science research council.

PRESCHOOL EDUCATION

104 **ZAHEER A:** Child's all round development - core of preschool education. Yojana 1969, 13(1), 25, 27.

Describes the activities of Central Social Welfare Board for the development of pre-school education. The Board operates two programmes: 1) grant-in-aid programme for voluntary agencies to increase child enrolment, purchase instructional and recreational material and equipment, employ trained teachers, and construct school buildings; 2) sponsored programme of establishing institutions for pre-school education in rural areas not covered by voluntary agencies. The Third Plan programme included: 1) training of workers; 2) standardization of instructional and recreational material and equipment; and 3) production of pictorial literature. Based on the recommendations of the Evaluation Committee (1964), the Board's revised Welfare Extension Projects aim at the all-round development of the pre-school child by setting of Balwadis, strengthening the family to bridge the gap between the home environments and the pre-schools.

PRIMARY EDUCATION

105 **SHARMA B M, PRASAD C:** Functional status of rural primary schools in Rajasthan. Indian Educational Review 1969, 4(1), 44-56. 3 ref.

An attempt was made to examine the various aspects of the working of primary schools in order to assess the functional status of these educational centres which are integral parts of the 'Panchayat Samitis'. All primary schools (81 for boys and 9 for girls) of one Panchayat Samiti in Jobner (Jaipur District, Rajasthan State) were subjected to the study. The data have been analyzed and presented under the following headings: 1) enrolment trend (1959-66); 2) strength of teaching and non-teaching staff and their ratio (1959-66); 3) student-teacher ratio (1959-66); 4) number of school-going and non-school-going boys and girls; 5) school buildings; 6) facilty for gardening; 7) facilities for games and sports; 8) availability of essential teaching aids; 9) adequacy of the library; 10) help and incentives offered to students; 11) assistance available for the improvement of school buildings for the year 1959; 12) class-wise seating facilities; 13) furniture available for the staff and office. The major findings are: 1) most of the schools were established during the last 15-20 years; 2) the total enrolment of boys represented 66.7% in 1966 as against 88% in 1959; 4) student-teacher ratio ranged from 26:1 to 40:1; 5) 41.6% of the boys and 66.5% of the girls belonging to school-age group do not join schools; 6) 83.5% of the schools have their own buildings; 7) teaching aids, library facilities, furniture for staff and students, and facilities for games and sports are inadequate.

READING

106 DHAR K L: Reading problems of Indian students. NIE Journal 1968, 3(2), 22-4.

The reading problems of African students as revealed by the investigations conducted at the Makerere University College, and at the University of Ibadan and Ghana closely resemble those of Indian students. The suggestions for improvement are: 1) appreciation of the fact that different types of comprehension necessitate different study skills; 2) change in the present practice of teaching of isolated words and testing of the meaning of the words out of context; 3) determining the contribution of factors like low intelligence, limited experimental background, visual and oral defects, emotional difficulties, to poverty of vocabulary; 4) abolition of teaching of formal grammar which is not helpful in teaching reading; 5) training students in using dictionaries, reference books, encyclopaedias, indexes; 6) construction of rapid reading courses, graded reading material and comprehension exercises; 7) use of simplified versions of classics for developing reading skills.

SCHOOL BUILDINGS

107 CENTRAL BUILDING RESEARCH INSTITUTE, ROORKEE: Research on low cost school buildings. Education Quarterly 1968, 20(1), 51-3.

Highlights the progress achieved in working out functional and economical school buildings. The research work covered the following areas: 1) anatomical studies of children to find out basic data for various activities and their application; 2) teaching space requirement and storage space requirement; 3) dimensional data for furniture and fixtures; 4) proper daylighting of teaching areas; 5) effective planning and optimum utilization of space; and 6) development of plans for different regions. Some of the data revealed in the studies are: 1) minimum space requirement for a child is 1.11 sq. m.; 2) a classroom of 7.32 x 6.1m can accommodate 40 students in work-experience type of schools; 3) a classroom of 4.87 x 6.1m is adequate for 40 students for squatting pattern of teaching; 4) 0.68 cu. m. of storage space should be provided in the classroom to store teaching equipment and allied materials; 5) for obtaining the minimum level of 150 lux of daylight on the work plan at a level of 15% clear window opening has to be provided at a sill height of 90 to 105 cm for a classroom of 7.32 x 6.1 m. with unobstructed facades.

SINGLE TEACHER SCHOOLS

108 G K INSTITUTE OF RURAL EDUCATION, GAROGOTI: Experimental study of teaching in single-teacher schools. Indian Educational Review 1969, 4(1), 173-5.

Reports an investigation which compared the educational progress of students reading in an experimental single-teacher school with specially drawn up educational programme, and in some other schools following existing pattern of work (control group). The programme of work in the experimental schools consisted of: 1) organization of work (seating arrangements and grouping of pupils and plan of work and time-tables); and 2) teaching methods (syllabus, activities, teaching method, equipment and teaching aids). The programme lasted one full academic year during which the work of the experimental school was evaluated quarterly (internal). At the end of the year a common evaluation test (external) was given to experimental and control schools. The results show that the progress of students in the experimental school was better, and the technique employed in the school was well suited for the improvement of single-teacher schools.

SPECIAL EDUCATION

109 AMRIT KAUR: Personality-patterns of schedule and non-schedule caste adolescents - a study. Educational Trends 1969, 3(1-2), 26-9.

The sample consisted of 40 schedule caste, 40 non-schedule caste students (mean age 16, IQ range 60-119) selected from 4 Agra colleges. An English version of the Indian adaptation of Bernreuter's Personality Inventory consisting of 30 items was administered to the sample. Each item in the inventory was scored for 4 traits: neurotic tendency, self-sufficiency, introversion, and dominance. A comparison of the data relating to the two groups indicate that: 1) except in dominance, both groups are homogeneous with reference to the other three traits; 2) the adolescents belong to schedule caste and are more dominant than the other group. It has been concluded that provision of favourable environment would remove the personality difference.

Students irrespective of their caste would benefit by educational opporutnities provided to them and would develop the same degree of power for social adjustment.

110 **CHANDRASEKHAR S**: Education of the deaf. Hindu, Weekly Magazine 30 March 1969, p.III, Cols. 1-6. 876 words.

As against .2 million deaf children of school-going age only 70 schools exist for both children and adults, with an enrolment capacity of about 5,000. Steps taken by the government for the education of the deaf are: 1) establishment of a comprehensive national centre for training in several engineering and non-engineering occupations; 2) setting up a school for partially deaf children; 3) provision of scholarships for deaf children (516 scholarships awarded during the Third Plan); 4) setting up 9 special exchanges for securing employment for the deaf. Setting up a number of good pre-schools with facilities for consulting parents has been recommended.

111 **KHAN A H**: Suggestions for education of gifted pupils. Cenbosec News and Views 1969, 5(1), 7-8, 11, 13. 13 ref.

The three special provisions for the gifted viz., acceleration, ability grouping, and enrichment have been discussed and the following steps have been suggested to initiate a programme in individual schools: 1) undertaking the following types of studies: (a) comparison of achievement in different subjects with academic ability; (b) survey of good students who dropped before the final examination; (c) analysis of the behaviour of more able students who create discipline problems; (d) analyzing the reasons why some gifted students do not prosecute higher studies; 2) analyzing the situation obtaining in the school and adopting programmes likely to be successful; 3) improving the existing programme to be followed by the adoption of new plans on experimental basis; 4) involving, in the programme staff-members who show interest in gifted pupils; 5) allocating some funds for the programme; 6) discussing the programme with the school board and the community leaders. Assistance may be obtained from the Department of Psychologicl Foundations of NCERT.

112 **MOOKHERJEE S, MOOKHERJEE D**: Educational provisions for the gifted - a review. Indian Educational Review 1969, 4(1), 101-15, 48 ref.

Presents a review of the significant studies conducted during 1928-1967 in three major areas of teaching the gifted, viz.,

8

acceleration, enrichment, and special classes including homogeneous and heterogeneous groupings. Some trends revealed in the discussion of the literature are: 1) opinion in the field of proper administrative procedure for the gifted is far from conclusive; 2) in acceleration, educators are undecided about the best way to provide it, the amount to be provided, and the grade and IQ level where acceleration would be best suitable; 3) although the need for enrichment for the gifted students is not questioned, the nature of enrichment (vertical or horizontal) is still subject to controversy; 4) no specific definition or criterion of the gifted is available in the literature.

STATISTICS

113 **INDIA. MINISTRY OF EDUCATION:** Education in universities in India, 1962-63 - a statistical survey. Delhi, Manager of Publications, 1968, ii, 194p.

The first two chapters present a general and a statistical survey of the progress. The review is followed by 39 statistical tables on the following topics: 1) universities in India - jurisdiction, type, faculties and medium of instruction/examination; 2) number of university teaching departments and colleges; 3) number of colleges by type of education; 4) enrolment; 5) enrolment by type of education; 6) enrolment by standard in different departments; 7) foreign students in India; 8) teachers in university teaching departments and colleges; 9) teachers by type of education; 10) pay scales of teachers in university teaching departments; 11) teachers in university teaching departments and colleges by salary groups; 12) examination results (standard-wise); 13) examination results (detailed break-up); 14) income of the universities and their colleges; 15) expenditure on universities and their colleges; 16) statistics of libraries; 17) statistics of evening colleges/courses.

114 **INDIA. UNIVERSITY GRANTS COMMISSION:** University development in India - basic facts and figures, 1965-66. New Delhi, the Commission, 1968, ix, 266p.

The annual statistical report based on the data supplied by the various universities and colleges relates to the position as on 15th August 1965 and covers the following aspects: 1) all-India statistics (1963/64-1965/66) on enrolment; 2) universities; 3) colleges and teaching departments of universities; 4) enrolment in teaching departments and affiliated colleges (total 1.7 million, women 20.6%); 5) faculty-wise enrolment (break-up by universities); 6) enrolment distribution according to stages;

staff position in university teaching departments and colleges (university-wise data on staff-pupil ratio also included designation-wise break-up of staff); 7) halls of residence and staff quarters; 8) postgraduate education and research. Data pertaining to institutions deemed as universities and institutions of national importance have been given separately Wherever relevant, sex-wise, faculty-wise and university-wise break-up has been given. The appendices contain some additional statistical data.

STUDENT INDISCIPLINE

115 Conflict of generations /̄Editorial_/: Educational India 1968, 35(7), 218-19.

The latest theory that conflict of generations is responsible for student unrest is unfounded since many among the older generations favour drastic changes in the social order unlike many young conservatives and conformists. The failure of parents and teachers in effecting proper socialization of children, and the revolutionary atmosphere created by extremist political parties cause the unrest. Student unrest is partly a law and order problem, which should be faced with strength and courage.

116 CEYRAC P: Analysis of student unrest and anti-social behaviour. (In Mathias T A, Ed. Education and social concern. Delhi, Jesuit Educational Association of India, 1968. 145-53).

The history of student unrest in India has been traced and its causes have been analyzed. Factors immediately connected with university and contributing to unrest are: 1) lack of motivation in students; 2) poor quality of teaching; 3) absence of a challenging curriculum; 4) economic problems; 5) uncertain employment prospects; 6) crisis of authority; 7) corruption in social and political life. Student unrest, is only one aspect of the crisis through which India is passing. The root of unrest can be traced in the emergence of masses seeking social justice and human conditions of living and unconsciously striving to displace traditional westernized leadership. The remedial measures suggested are: 1) implementing the recommendations of the Education Commission concerning student unrest; 2) associating right type of students with student councils; and 3) giving students a deep sense of motivation and purpose, and a sense of adventure and a new vision.

117 GHOSH S K: Student challenge round the world. Calcutta, Eastern Law House, 1969, viii,254p. 75 ref.

The author, a police official, surveys the recent wave of students challenging the authorities in India and in different parts of the world. An analysis of student unrest in India reveals the following features: 1) demonstrators belong to different age groups and social strata and also include non-students; 2) motivation differs widely; 3) educational authorities do not take appropriate action at the right time; 4) mostly these demonstrations are sponsored by some interested parties including teachers; and 5) students expect special treatment from the police. The following suggestions habe been offered for policing a student revolt: 1) adoption of a balanced view of the problem and taking firm decisions in time; 2) enforcing prohibitory orders on processions and assemblies only if outbreak of violence is foreseen; 3) making all-out efforts by the police for projecting a better image; 4) seeking co-operation of the press and public; 5) appointing a judicial commission only in exceptional circumstances where the facts are seriously in dispute; 6) pressing the services of the army on rare occasions; 7) minimum deployment of uniformed police force, keeping them out of the sight of the demonstrators, and using them only when the situation demands; 8) making available the services of a qualified and impartial doctor to examine those complaining of injury while being arrested; 9) transferring arrested persons to court custody as soon as possible; 10) arranging trial of cases as far as possible inside jail premises; 11) imparting special training to the police in the methods and techniques of combating mob violence.

118 INDIA. CONFERENCE OF INSPECTOR GENERALS OF POLICE. COMMITTEE ON STUDENTS' AGITATION: No judicial probe - police role in student stirs. Times of India 8 January 1969,p.11,Cols. 5-6. 1150 words.

Indiscriminate judicial enquiry into instances of police firing and other alleged excesses has been opposed, because it would have demoralizing effects on the police force and reduce their effectiveness in handling riotous situations. The Committee made the following suggestions to deal with student agitations: 1) use of minimum force necessary to achieve the desired objectives and regulating it according to the prevailing circumstances; 2) stopping all processions which are likely to cause breach of peace; 3) non-interference with peaceful processions; 4) use of experienced and specially trained personnel to deal with situations involving students. The police should have the right to enter the university campus after informing the university authorities, to investigate into crimes unconnected to student agitation. Police should also have the right to enter the campus not necessarily with the concurrence of the university authorities to deal with student agitation, if 1) a serious breach of peace is threatened or is actually taking place; 2) other criminal offences are being committed; and 3) the campus is being used as a base for conducting violent activities. For handling agitations outside the campus, it would be advisable to associate proctoral or disciplinary staff of the educational institution Other suggestions are; 1) no interference in legal processes involving students; 2) no premature termination of orders of rustication; 3) no interference in the affairs of universities by political parties; 4) appointment of a judicial commission only when material evidence of deliberate use of excessive force exists. Normally a magisterial inquiry would be sufficient.

119 KABAD B K R: What ails the students - sources of present discontents. Times of India 8 February 1969, p.8, Cols.3-5. 1548 words.

A comparison has been made of the causes of student unrest in India and the affluent West. Discontent over conditions in the campus, and dim employment prospects are common factors. But student revolt in the West has two distinctive aspects: 1) reformers seeking redress of specific grievances directly related to the life of universities; and 2) revolutionaries guided by some ideal of setting up a conflict-free social structure. Revolutionaries who are products of a prosperous society display some vague emotional attachment to revolution and reject the existing social values without sacrificing the comfort provided by the society. Indian students on the other hand do not reject the values of the acquisitive society but struggle for a place in it through education. Acquisition of a degree being the main object, revolt in campuses centres around demands like lowering of standard of examinations.

120 KAPOOR P: Politicians, teachers and administrators. Hitavada 25 March 1969, p.4, Cols. 1-4.2965 words.

Politicians, teachers and administrators are primarily responsible for student unrest. Exploitation of students by political parties and interference by politicians controlling the administrative machinery in appointments for various offices in the universities are cases in point. Other causes are: teachers participating in campus intrigues for personal benefit, men of poor calibre and character appointed as Vice-chancellors, and the ever-present hostility between teaching and administrative personnel. Students would rather bear inefficiency in teachers than tolerate injustice and favouritism. Men of academic eminence should be appointed as Vice-chancellors, and the special responsibility of State Governors in this respect has been stressed.

121 MEHTA G N: Self-regulation by youths, student police and courts. Mail 14 February 1969, p.4, Cols. 5-6. words. Student police or student courts. Amrita Bazar Patrika 9 February 1969, p.II, Cols. 3-4; Free Press Journal 15 January 1969, p.4, Cols. 7-8, p.8, Col.8 .800 words.

Examines two recent suggestions to solve the problem of student unrest: 1) police station amanned by students within the Delhi University campus, as suggested by the Delhi Police Commission; and 2) a hierarchy of student courts at the district, State and all-India level to be presided over by students. An examination of the functioning of student courts in different countries shows that the schemes did not produce the desired results. The opinions of criminologists and psychologists are against courts. However, experience shows that setting up a student police force is worth experimenting. Psychologists agree that students involved in campus troubles are only seeking to fulfil the craving for self-assertion and limelight. Saddling them with responsiblity would give them opportunities to fulfil it and bring peace in the campus.

122 SARKAR C: Acquiescent society. Hindustan Standard 27 February 1969, p.4, Cols. 3-6; p.5, Col.8. 1435 words.

Modern universities are characterized by two distinct types of students: 1) those from affluent urban families with some tradition of academic discipline and having good school education; 2) those belonging to rural areas possessing poor school level education, through mother tongue. A case study of Allahabd University in this context revealed that the majority of students belong to the neighbouring rural families of agriculturists, primarily motivated by the urge to raise social status. Students belonging to this category are mostly involved in troubles in the campus. The contributory faftors are: 1) over-crowded classes and hostels with no physical amenities; 2) lack of adequate contacts between students and teachers; 3) inadequate knowledge of English which dominates university education; 4) unsympathetic teachers who show partisan attitude to Western oriented students; 5) wrong selection of subjects; 6) inability to succeed in competitive examinations, due to poor educational background; 7) absence of proper guidance and counselling service from the university Employment Bureau; 8) lack of vocationalized courses.

123 **SHAMSUDDIN:** Causes and cure of student unrest. Christian Education 1969, 19(1), 12-15.

The low economic and social status of teachers, loss of personal contacts between teachers and students, increasing economic difficulties of students, over-emphasis on examinations, dominance of materialistic ideology over other values, and loosening of family ties have been identified as causes of student unrest. The remedial measures suggested are: 1) increasing salaries and provision of other facilities to teachers; 2) organizing refresher courses for teachers; 3) providing scholarships for deserving students; 4) setting up residential institutions where each teacher should be responsible for a number of pupils; 5) promoting self-help programmes to meet various needs of the school; 6) provision of physical and moral education; 7) introduction of examination reform; 8) diversification of courses; 8) increasing the cocurricular activities; 9) adoption of dynamic methods of teaching, tutorials, seminars and discussion.

STUDENT POLITICS

124 **BHATTACHARYYA B K:** Student movement - its main drawback. Assam Tribune 28 January 1969, p.4, Cols. 3-5.1230 words.

The student movement in India lacks commitment to basic issues like securing educational rights and ensuring social justice for the weaker section of the community, but is often involved in sectarian movements. It needs a scientific orientation in order to cut across national, linguistic, provincial and religious barriers. Such an outlook cannot be developed out of splintered movements, but needs a broadbased and basic comprehension of the world around us.

STUDENT SELECTION

125 **MISRA V S:** Investigation into admission criteria. Gauhati, the University (Examination Research Unit), 1968. 25p. 13 ref.

To find a suitable criteria for admission to university courses, a factor analysis of marks obtained by 1441 students in English (3 papers) history, geography, and mathematics in the Matriculation Examination (Gauhati University) of 1963 was made. The results do not support the hypothesis that a single ability is measured by all the school subjects. Further, an unidentified ability (named as 'verbal') seems to dominate the whole curriculum. Further investigations are necessary to find the nature of the abilities measured by examinations. The suggestions are: 1) for selection to undergraduate and postgraduate courses, stress should be given on marks obtained in the preceding examination in the subject which the candidate proposes to offer, assuming that the factorial structure for each subject remains unchanged at higher stages; 2) for selection to pre-university courses, a factor analysis study with higher secondary and pre-university marks should be done to discover common factors since different subjects are taught in the two courses. Pending such investigations weightage should be given on mathematics and geography, and English and history, for admission to science and arts stream respectively; 3) as regards objectives of teaching emphasis seems to be on acquisition of knowledge, rather than on its application.

TEACHER EDUCATION

126 **CHICKERMANE D V**: New ways in practice teaching. Teacher Education 1969, 3(2), 35-7.

Describes the new technique in practice teaching, a judicious combination of stray supervised lessons, reinforced by continuous teaching and internship spread over the entire period of training, adopted by the G K Institute of Rural Education, Garg ti, Maharashtra. The students doing the three-year integrated course in teacher education leading to Diploma in Rural Services (Education) undertake practice teaching through supervised lessons during all the three years. The internship is one week a year during which the students observe the functioning of the school selected by them. Stray lessons practised in groups of six or eight discuss under the guidance of supervisors units and subunits in the topic selected, the methods of handling them and the teaching aids required. An illustration of such group practice-teaching has been given.

127 **KRISHNA MURTY S**: Administrative patterns and problems of teacher education in India. Teacher Education 1969, 3(2), 7-18. 6 ref.

Describes the prevalent patterns of teacher education and the role of the following authorities administering teacher education: 1) Union Ministry of Education and its statutory and advisory bodies viz., National Council of Educational Research and Training, University Grants Commission, and Central Advisory Board of Education (CABE); 2) State governments; 3) universities; 4) private managements. Three models of administrations exist: centralized, decentralized, and midway between them. The decentralization is obvious in the Centre-State relationship. The centralization is noticed in the intra-departmental administration of the Centre, the State governments and the university departments. The midway model is discernible in the Centre-State efforts made through CABE, National and State Councils and the ministerial and other conferences. The problems of teacher education belonging to administrative (further analyzed as structural, operational, financial and personnel) and academic domains. Directions in which the administration should be geared have been listed.

128 MATHUR V S: Training of junior teachers. Teacher Education 1969, 3(2), 30-4.

Discusses the importance of the training of pre-primary and primary school teachers and suggests a programme. The syllabus of the one-year diploma course for teachers of pre-primary schools conducted by M S University of Baroda has been presented as the model. The syllabus in two parts (theory and practical) covers topics like understanding the pre-school child, nursery school education and management, parent and community education, school health, and nutrition. Students should be selected from young matriculates with requisite social, cultural and intellectual qualities. At the primary stage, three different alternatives have been recommended by the Committee on Elementary Teachers' Training: one-year degree course for graduates, two-year diploma course after higher-secondary level, and three-year certificate course for non-matriculates. Special attention is needed to enrich the knowledge of subjects for the last two courses.

129 SHAH G B: Examination reform in colleges of education - Baroda tries a new experiment. NIE Journal 1968, 3(2), 13-17.

Describes the new scheme of examination introduced in 1967 by the Faculty of Education and Psychology of the M S University of Baroda. The entire course content had been divided into 27 units - 11 compulsory units, 14 optional units (2 to be selected) and 2 compulsory practical units - each carrying specified 'credits'. Students' performance would be judged on the basis of classroom tests, term papers, and class work and a final examination at the end of each semester covering the course units taught during the semester. An eleven-point scale would be used for grading. A final grade would be awarded to each student on the basis of his total performance. Two internal and two external examiners would constitute the board of examiners. The total points [A] for each course unit would be determined by multiplying the grade points earned by the student by the specified 'credits' [B]. The average grade point for each semester would be calculated by dividing the cumulative total of ∠ B_/ by the cumulative total of ∠ A_/ for each course unit. The average grade point is converted into the overall grade using the eleven-point scale.

130 UDAY SHANKER: Integrated course for teachers' training. University News 1969, 7(2), 16-17.

Describes the four-year integrated programme of teacher education introduced in the college of Education, Kurukshetra University in 1960 on the pattern of American Teachers' Colleges. Only first-class matriculates are admitted to the course which covers both academic as well as professional subjects. Course contents of five years are covered in four years by extending the daily working hours and reducing the vacations. Results of two studies show that the performance of the graduates of this college was better than that of trainees of other institutions. Evaluation of the performance of the graduates now working as teachers has been suggested by UGC.

131 WRAGG M: Motivation in some teacher-training institutions in India. Journal of Education and Psychology 1969, 26(4), 222-31. 37 ref.

The responses given to the question why do you want to be teacher? by 432 teacher students (219 men and 213 women) studying in five teacher education colleges. The eighteen commonest responses have been listed, with percentage of the whole sample. Some suggest a mainly academic approach to teaching (15.67%), others a child-centred one (8.94%), but the largest number of students (37.30%) gave responses indicating an idealistic approach. Some of the interesting responses are: 1) family tradition was metnioned anly by .96% of the sample although a large number of students had relatives who were teachers; 2) there is no metnion of the influence of an admired teacher; and 3) 5.85% mentioned economic factors in spite of poor economic condition and high rate of unemployment in India. An analysis of the sex differences found in one college shows that: 1) two main reasons appeal equally to both (a) a general liking for the profession and (b) the attitude that teaching is a noble, sacred and honourable profession; and 2) marked differences existed on other points. Similarities and differences between the findings of the study and previous research have been discussed.

TEACHER ORGANIZATIONS

132 DUTT S: Toward a true profession of teaching. Educational Forum 1969, 14(1), 10-18.

Discussing the different viewpoints on the question whether teaching constitutes a profession, it has been pointed out that extreme shortage of teachers particularly at the elementary level would temporarily tend to slow down the process of professionalization. But in due course longer preparation in academic and professional studies would become the standard requirements for teachers for all levels of education. In this context the role of teacher organizations at different levels to improve the standard of the profession has been emphasized. The programmes recommended for teacher organizations are: 1) publication of professional journals; 2) preparation of instructional material - books, curricula guides; 3) dissemination of information about the profession to teachers, and public; and 4) development of a code of ethics.

TEACHERS

133 GANGAPPA M A: Mental health of a teacher. Education 1969, 48(2), 5-12; Journal of the Mysore State Education Federation 1968-69,22(3-4); Educational India 1969, 35(8), 263-6; 35(9), 299-301.

Two factors, external and internal, make teachers mentally ill and maladjusted. External factor includes poor salary, heavy load of work, lack of professional competence, insecurity of job, lack of social acceptance, poor home conditions, and lack of professional freedom. Inferiority complex, self-centredness, over-ambitiousness constitute the internal factor. For promoting the mental health of teachers it is necessary to develop in them a wholesome attitude: professional competence, social efficiency, democractic outlook and good living habits. Educational implications of the problem have also been discussed.

134 OJHA H: Some characteristics of an ideal teacher. Psychological Studies 1969, 14(1), 51-5.

An attempt was made to determine the ten most preferred characteristics of an ideal teacher, as viewed by the college teachers and students. A check-list containing 50 qualities of an ideal teacher was prepared on the basis of the previous studies and discussions with teachers and students. A sample of 200 male college teachers and 200 undergraduate male college students of Bhagalpur University (Bihar) was asked to select 10 most preferred characteristics from the list and arrange them in preferential order. The ten most important characteristics of an ideal teacher as indicated by college teachers in order of preference are: 'scholar', 'clear in expression', 'wise', 'disciplinarian', 'punctual', 'honest', 'man of character,' 'healthy', 'hardworking', and 'just', The ten most important characteristics of an ideal teacher as indicated by students in order of preference are: 'generous', 'honest', 'forgiving' 'man of character', 'punctual', 'clear in expression', 'wise', 'scholar', 'friendly', and 'well-wisher'.

135 **SINGH R P:** Mādhyamik śālā ke śikṣakoṁ ki sthiti - samācārp~~t~~atroṁ ke vijñāpanoṁ kā ek adhyāpan (= Status of teachers of secondary schools - a study of newspaper advertisement) ∠ Hindi_/
Naya Shikshak 1968, 11(1), 49-59.

A survey of the advertisements published in the Hindustan Times, The Statesman, The Times of India (all published from Delhi) revealed the following: 1) lower salaries offered to comparatively highly qualified personnel reflect the lower social status of the profession; 2) the language of the advertisement has a bearing on the status; 3) unlike private schools, under the grants-in-aid system, government schools give due consideration to rich experience and high academic qualifications; 4) undue restrictions are imposed by these private schools on teachers' movement and personal habits, e.g. some schools want non-smoking and vegetatarian teachers; 5) the language of the advertisements issued by these schools is not polite, and is vague about the future prospects of teachers. Their advertisements reflect non-academic control of the institutions; 6) such schools want teachers to appear before the selection at their own expense; and 7) they prefer retired government officials as headmasters.

TEACHING METHODS

136 **BILLIMORIA F R:** Teaching of biochemistry in medical colleges. Journal of the Indian Medical Profession 1969, 15(12), 7065-7.

The importance of biochemistry in the medical curriculum and the need for its proper teaching have been stressed. The suggestions are: 1) reducing the theoretical content of the curriculum and increasing the practical work; 2) spreading the teaching over the entire medical curriculum, instead of hurriedly completing it in the first three semesters; 3) teaching practicals in conjunction with the theory; 4) guiding students to work on practicals independently; 5) organizing visits to other institutions for showing modern instruments not available in the institution; 6) designing a compulsory course in ward work for providing practical instruction in nutritional deficiency diseases, metabolic diseases, chemical analysis of various body fluids; 7) using audio-visual aids for teaching different chemical reactions, nutritional and metabolic diseases, etc.; 8) weekly or periodical assessment of students, giving emphasis to their attendance, interest, devotion to work etc.

137 DUTTA S R: Best method for teaching. English in Indian background. Bulletin of the West Bengal Headmasters' Association 1969, 18(3), 96-101.

Since current syllabi in English include different branches (prose text for intensive study, poetry text for aesthetic pleasure, supplementary readers for extensive reading, grammar, translation and different types of composition work), a synthetic method incorporating the merits od different methods has been suggested. The proposed method is basically a structural approach combined with Harbation technique suitable for teaching prose, supplementary readers, grammar, translation and composition. French technique of Lecture Expliquee for teaching poetry, dramatic technique, and also symposia and debates for advanced students are other methods to be adopted. Strict adherence to a single method is neither possible nor desirable.

138 DUTTA S R: Structural vs. Palmer's method. Journal of English Language Teaching 1968, 4(1), 20-3.

A comparative evaluation of two methods of teaching English shows that structural approach is more an activity method than the mere drill-method of Palmer. It is a situational approach, more comprehensive in nature, and combines the salient features and merits of all other previous methods viz., graduation of structure (essence of Grammar Method), oral drilling (fundamental aspect of the Direct Method), fluency in reading and selection of vocabulary (core of Dr. West's New Method), and analysis of the language into different aspects (Dr. Palmer's method).

139 GAIND D N: Teaching units as aid to class instruction. NIE Journal 1969, 3(3), 42-4.

A properly conceived and organized unit integrating the knowledge-learning and experiences of children would be effective in realizing specific educational goals. Selection of a unit should be based on: 1) its contribution to the outcome of the course; 2) its significance to the students' understanding of an organized field of knowledge; 3) its appeal to the interest of the class; 4) possibilities of desirable concomitant learning. The effectiveness of the unit as a teaching aid would depend on the following factors: 1) an over-view of the unit; 2) formulation of specific objectives; 3) outline of the total content which should bear a close relationship with the objectives; 4) precise teaching hints which should include different approach to the exposition of the unit, suggestions for organizing the learning experiences of children, developmental questions, individual and group activities, and assignments of various types; 5) development of evaluative techniques; 6) reading list.

140 MAJUMDAR H B: Reorganization of elementary mathematics. Teaching 1969, 41(3), 69-74.

The present system of teaching mathematics neither helps the child in applying the knowledge to real-life situations nor in conceptual learning. Hence the entire syllabus should be built round the following basic unifying topics: 1) number; 2) symbolism; 3) operation; 4) measurement; 5) relationship and 6) proof. The three suggested approaches in teaching are: 1) providing only concrete situations in the initial learning stages, and gradually helping to think in terms of the abstract; 2) organizing the unified content in terms of concepts under each of the above six sections, b) students' activities; c) evaluative procedures, 3) adoption of new techniques like programmed learning for helping the child to be self-reliant in learning.

141 PRASAD J B: Diagnostic approach in education. Maharashtra Educational Journal 1969, 17(4), 112-14. 6 ref.

The need for diagnosing the strength and weakness of a student in different subjects has been stressed for improving class-room teaching and adopting remedial measures. The diagnostic approach is applicable in basic and fundamental areas, irrespective of the subject matter. Development of diagnostic tests needed for this purpose, for any selected area, involves the following steps: 1) analysis of the syllabus of a particular class to locate the basic concepts taught in the subject; 2) specifying the objectives of teaching the subject in terms of expected changes in the students; 3) developing the diagnostic test on the basis of the expected behavioural change; 4) administering the final form, without time limit to two advanced classes to facilitate a cross-sectional study in which students belonging to different age groups may be studied with the same tool within the same interval of time; 5) collecting the sample of mistakes separately which would reveal the persistent errors carried forward by pupils from one class to another; 6) removing the items which are not working, by determining statistically the difficulty of discrimination index of each item.

142 SYMPOSIUM ON TEACHING OF GEOGRAPHY IN SCHOOLS, MADRAS, 1968: Brief report ... held in ... connection with the 21st International Geographical Congress which took place in December 1968. Geography Teacher (India) 1969, 4(2), 137-47.

The report includes the summary of a survey on teaching geography in Tamilnadu. The questionnaire sent to nearly 600 schools (replies received from more than 350 schools) covered the following aspects: 1) general information regarding the school; 2) scope and concept of school geography; 3) organization of school geography; 4) teacher; 5) teaching aids; 6) evaluation; 7) in-service training of teachers. The significant findings are: 1) 81% of the teachers did not study geography at the graduation level; 2) 10% felt that the subject increases the general knowledge of the pupils; 3) the syllabus was overcrowded because of inadequate time allotted for teaching; 4) coordinating the teaching of geography with other subjects in the curriculum was not desirable; 5) geographical excursions were not regular due to the lack of finance; 6) new methods of teaching (like library-centred, project method) were yet to be developed; 7) the large size of classes was a big handicap in teaching; 8) 80% geography teachers also taught other subjects; 9) 85% schools had geography museums; 10) 45% schools reported non-availability of funds for the purchase of teaching aids; 11) most of the teachers attended in-service training conducted by the Extension Services Departments of Training Colleges and other agencies; 12) geography is taught as a separate subject and not as a part of social studies. The proceedings include abstracts of 8 papers on teaching geography in foreign countries.

TESTS AND MEASUREMENTS

143 BHANGOLIWAL B S: Test of computational and perceptual skills for the selection of students for engineering colleges. Journal of Education and Psychology 1969, 26(4), 276-82. 5 ref.

A battery of four tests, viz., arithmetic computation (Arith), number reading (NR), number finding (NF) and following the lines (FL), constructed to measure the computational and perceptual skills of the applicants for admission to engineering colleges, was administered to 250 students of all branches of an engineering colleges in Gwalior (MP). The distribution of scores on all the four tests was found to resemble very closely the normal probability curve and revealed a good scatter of scores. Practice and teaching in engineering syllabi do not seem to have any effect on the battery, with the exception of one test. The reliability coefficients of the tests were found to range between 0.71 and 0.98. The battery was validated against the average score obtained by the students in the University grades. The validity coefficients were found to be between 0.20 to 0.30 except in the case of NL where the value was 0.80. After excluding this test the multiple correlation of the remaining tests is 0.37 which is significant at 0.01 level. The battery was found to be a good tool for allocation of students to different branches of engineering and also for selection of applicants for admissions to Engineering Colleges in India. The suggested regression equation is CS = 11 (Arith) + 4 (NF) + 5 (FL).

144 DEB M: Factor analytical study of an engineering aptitude test. Journal of the Indian Academy of Applied Psychology 1969, 6(1), 25-6. 11 ref.

The engineering aptitude test constructed by the author which contains 40 items was administered to 334 candidates seeking admission in an engineering college. Five different sets to measure five qualities needed for successful completion of the course were scored separately and the scores were correlated by the method of Pearson's Product-moment correlation and a correlation matrix was obtained. The results show that most of the sets are heavily loaded with one factor which has been termed as 'Mechanical Reasoning'.
The findings justify the validity of the test. The studies reveal that this aptitude depends on the factor 'Mechanical Reasoning'.

145 KAKKAR S B: Values of intelligence tests. Teaching 1969, 41(3), 88-91. 7 ref.

A sample of 45 M.Ed students (26 males and 19 females in the age-group (24-31) of the Government Training College, Jullundur, Punjab was asked seven questions regarding the usefulness of intelligence tests. They were asked to give a specific reply in one of the four terms: 1) to a large extent; 2) to a reasonable extent; 3) help a little; and 4) do not help at all. Analysis of responses in terms of the first item shows that the usefulness of the test in classifying students according to mental ability scored the highest percentage (81%). Other responses in order of preference are: revealing brightness or dullness of young (70%), diagnosing backwardness (68%), classifying students for different subject groups (34%), predicting ability to adjust to new environments (31%), understanding the level of achievement (19%), and predicting level of scholastic achievement (12%). The findings reveal that intelligence tests, if used along with other tests and interpreted and applied in the light of other facts about individuals, are an effective tool for measuring the different abilities.

146 **MAJUMDAR P K**: Factor patterns of scholastic aptitude test. Indian Journal of Applied Psychology 1969, 6(1), 43-6. 5 ref.

A sample of 400 students, 200 each in science and humanities group (classes IX-XI) was selected from the standardization sample of Majumdar's Scholastic Aptitude Test (Majumdar P.K. Construction and Standardization of a Group Scholastic Aptitude Test. D. Phil. Thesis. Calcutta University. 1965). The test contains 9 subtests: similarities, comprehension, inductive reasoning, vocabulary, mathematical reasoning, classification and inducive reasoning. Correlation matrices for each group were analyzed for factors, and the factor matrices rotated orthogonally. Interpretation of the factors have been attempted. Majumdar's earlier findings on the group difference study from profile patterns have been corroborated.

147 **NIJHAWAN H K**: Verbal and non-verbal content of intelligence test items. Journal of Education and Psychology 1969, 26(4), 265-72. 17 ref.

Analyzing the different studies on the reliability, internal criterion, and the face validity of non-verbal scales and the group factor content of verbal and non-verbal test, it has been pointed out that although verbal tests are good predictors of scholastic achievement, combined use of verbal and non-verbal tests would produce better results. To overcome the problem of lack of comparability, it has been suggested that two types of tests should be so constructed and standardized that they supplement each other; and the tests themselves, as far as possible, should be a good measure of the general factor.

148 **RAJALAKSHMI MURALIDHARAN**: Developmental norms of children aged 2½-5 years. Indian Educational Review 1969, 4(1), 67-91.

The stydy undertaken on a sample of 38 children in the age group 2.5-5, drawn from 10 nursery schools, to trace the pattern of child development during these years. The developmental aspects studied were: adaptive, language, motor, and personal-social development. Other objects were: 1) to develop, modify and adapt to Indian conditions the testing equipment in Gesell's Developmental Schedule in these four fields (Gessell A: First five years of life. London, Methuen, 1940); 2) to develop observational record blanks for all the tests included in the study; and 3) to develop a standard procedure for administering the different tests. The different tests used are: A. Adaptive development: 1) cube play; 2) form discrimination; 3) drawing; 4) number concept; 5) immediate memory; 6) comparative judgement. B. Language development: 1) action agent test; 2) comprehension test; and 3) concepts of name, age, address and time. C. Motor development: 1) throwing, kicking and catching balls; 2) standing on one foot; 3) walking; 4) running; 5) ascending and descending; 6) skipping; 7) jumping; 8) threading beads; and 9) cutting with a pair of scissors. D. Personal-social development: the interview schedule to elicit information from mothers, teachers, and examiners on the following types of behaviour: 1) eating; 2) sleeping; 3) elimination; 4) dressing; 5) personal hygiene; 6) communication; 7) play activities; 8) developmental detachment.

149 SARAF S N: Construction and standardization of an achievement test in Indian history - synopsis of the thesis submitted to the University of Delhi for the Ph. D. degree. Delhi, Central Institute of Education, 1968. v, 100p. (CIE Studies in Education & Psychology, pub. no.60).

An attempt has been made to prepare a standard tool in English for evaluating the achievement of students of class XI in Indian history (elective). The study has been presented in the following order: 1) assessment of the present examination system; 2) implications of evaluation in history; 3) planning of the test; 4) preparation and selection of test item; 5) pre-try-out and item analysis; 6) final form of the test. The text of the test has been given in the appendix. The final form of the test was administered to 924 students (454 boys and 470 girls) reading in 45 schools in Delhi. The reliability coefficients are fairly comparable with the standardized achievement and intelligence tests constructed in India. As regards the validity coefficients, it was observed that the test scores have low relationship with scores of the board examination, but high relationship with the teachers' ratings and the scores of internal assessment.

150 SINGH R N: Construction and standardization of a battery of verbal, numerical and abstract reasoning tests. Searchlight 7 January 1969, p.4, Cols. 4-6; p.5, Col.8.1850 words.

Describes the construction of a test suitable for Hindi knowing students of classes IX-XI and pre-university class. The test measures general intelligence as well as ability for success in humanities (VRT), pure science (NRT), and technology (ART).

The administration of the battery consisting of three tests (VRT, NRT and ART) and further sub-divided into six parts ((words classification, words analogy, number series, arithmetic problem, figure analogy and figure series) takes 90 minutes. Using test-retest and split-half methods, the co-efficient of consistin and the co-effcient of stability of the battery were found to be .90 and .90 respectively. The validity of the battery calculated against school marks, VIT, SAT and progressive matrices tests was found to be .50, .61, .71 and .63 respectively. Grade norms were constructed by administering the battery to 4000 students. Additional uses of the battery are: 1) a tool for school guidance, and 2) training undergraduate students of psychology in the method of test administration.

151 SINHA A K P, SINHA L N K: Scientific aptitude test for college students. Indian Journal of Applied Psychology 1969, 6(1), 47-50.

The test developed by the Institute of Psychological Research and Service, Patna University, contains 34 items covering seven areas: experimental bent (5); detection of inconsistencies or illogical conclusions (7); ability to deduce conclusions from data provided (6); accuracy of interpretation (4); ability to reason and solve problems (7); caution and thoroughness (4); accuracy of observation. The relative weights of the areas were determined by comparing the responses of two groups of students - pre-university science students (100) and pre-university arts students (100). The intercorrelations were computed from the scores of 100 students of the science group. The validity of the test was determined by computing the correlation between composite scores on the test, and university examination results. Norms for three groups viz., selected scientific group, unselected scientific group, and non-scientific group, have also been given.

152 VIDHU MOHAN: Study of scores of JPI. Journal of Psychological Researches 1969, 13(1), 37-42. 14 ref.

The study was undertaken to collect further comparative data on the junior personality inventory developed by the first author /_ see Indian Educational Material vol.2, abstract no.611_/ on the model of Eysenck's JEPI (British Journal of Educational Psychology,
1965, 35(3), 362) to measure neuroticism and extraversion in children. The inventory was administered to a sample of 800 children (400 boys, 400 girls) in the age group 10-15 selected from various high schools of Allahabad, Meerut and Agra in UP. The scores on neuroticism and extraversion were compared with those of the previous study conducted in Delhi. The results indicate that the UP sample scored lower on neuroticism and higher on extraversion than the Delhi sample. The C-scale norms were also

different. There was a tendency of neuroticism scores to cluster in the upper range, and of extraversion to cluster in the lower range. These results were explained in terms of age sex variables as pointed out by S.B.G. Eysenck.

VOCATIONAL AND TECHNICAL EDUCATION

153 **DOSS T R:** Social objectives of vocationalization. Hindu 9 January 1969, p.6, Cols. 6-8.1480 words.

The system of vocationalization at pre-secondary, secondary and post-secondary stages should be determined keeping in view the changing socio-economic patterns of the country. The three main implications of vocationalization should be: 1) assisting the progress of technical revolution in agriculture by providing minimum servicing and assistance facilities in each village; 2) training a large number of semi-skilled workers in multiple processes of modern production and technology; 3) production of a large number of service operatives. The patterns of education should take into consideration the following requirements: 1) introducing students to a wide range of skills and competencies in specific engineering trades, thus preparing them for the on-job training that will fit them into specific jobs in industry or agriculture; 2) providing knowledge in basic engineering principles and moulding their attitudes and skills for creative activity in developing society; 3) integrating general education within the overall framework of the courses.

154 **INDIA. NATIONAL COMMISSION ON LABOUR. STUDY GROUP ON EMPLOYMENT AND TRAINING:** Report. Delhi, Manager of Publications, 1969. viii, 163p.

The first part presents an assessment of the existing employment service and recommendations covering the following aspects: 1) functioning of employment exchanges; 2) employment market information; 3) vocational guidance programme; 4) saptitude testing programme for selection of trainees for Industrial Training Institutes (ITI's); 5) collection and dissemination of occupational information; 6) employment exchange statistics; 7) future programme of employment service; 8) future organization of employment service including Central Institute for Research and Training in Employment Services. The second part dealing with the training programme for craftsmen and supervisors covers the following aspects: 1) training scheme for craftsmen organized in ITI's; 2) All-India Trade Tests conducted by the National Council for Training in Vocational Trades; 3) training of craft instructors in Central Training Institutes and Model Training Institutes; 4) apprenticeship training scheme; 5) future training programme and 6) functional organization of training. In each case the existing position has been examined and suitable recommendations made. In the concluding part an organizational set-up reflecting the concept of a well-knit and integrated manpower service has been proposed. The service should have two wings: 1) employment wing concerned with the assessment of the manpower situation, forecasting manpower supply and demand, and utilization and distribution of human resources; 2) training wing responsible for development of human resources through institutional and apprenticeship training programme, training of craft instructors, highly skilled and master craftsmen and shop-floor supervisors and foremen.

155 KHAN M S: Vocationalization of commerce education. Hitavada 31 January 1969, p.4, Cols. 6-7. 590 words.

The workshop, organized at Pachmari from January 13-19, 1969, by the Regional College of Education, Bhopal, to prepare a syllabus for a two-year vocational course in commerce, determined the objectives of the course, subjects for study, objectives of each subject, and suggested physical facilities necessary for teaching these subjects. The subjects included are: 1) language; 2) book-keeping and accountancy; 3) elements of economics; 4) office management and correspondence; 5) commercial geography; and 6) type-writing, as compulsory subjects. Only language should be taught both the years.

Each student should select one of the following five electives, stenography (Hindi), stenography (English), marketing and salesmanship, secretarial and office practice, and business arithmetic-cum-advanced accountancy. Students selecting stenography may be exempted from compulsory commercial geography, and be taught advanced typing. The proposed scheme should be implemented by the Board of Secondary Education and the Education Department of M.P.

156 MURARI RAO M S: Indian polytechnic education system. Journal of the Association of Principals of Technical Institutions, India 1969, 21(3-4), 107-12.

The present polytechnic education system had failed to provide middle-level technicians required by the industry. A plea has been made to improve the polytechnic education system by adopting the established engineering methodology, and to devise an engineering system. The methodology consists of the following sequences: 1) identifying and cataloguing clearly the desired objectives; 2) conceiving new ideas for effectively meeting the desired need; 3) evaluation of alternative solutions by experiments, by judgement or by other suitable ways to determine the most effective solution; 4) designing the product or system on the basis of existing knowledge, experience and users' reactions; 5) actual building of the product or system according to design; 6) testing the efficiency of the product or system. Though there is no agency today in India to undertake creative activities, the Regional colleges of education have been engaged in evolving a new system by working in areas of research, development and design, and by reducing some of the constraints, especially those pertaining to operational staff.

WOMEN'S EDUCATION

157 Waste of women-power ⌊Editorial⌋: Hindustan Times 9 February 1969, p.9, Cols. 1-3. 648 words.

In spite of the constitutional and administrative provisions about the education, employment and social position women, they constitute under-privileged section of the society. Attention has been drawn to the non-utilization of educated woman-power. Against a target of 53,000 new women teachers during the Third Plan, only 12,000 were appointed in spite of the availability of qualified women. On othe other hand, a large number of women willing and able to enter different fields of activities do not get adequate educational opportunities. Women's education is well below the national average.

158 SEN N B, Ed.: Progress of women's education in free India. New Delhi, New Book Society of In dia, 1969, 331.

A collection of articles by sixty experienced women educationists of India on the following topics: 1) history of women's education in India; 2) role of educated women and their achievements; 3) adult female education; 4) nature and scope of women's education; 5) problems of women's education; 6) improvement of the pattern of women's education; 7) higher education of women; 8) music in women's education, The last chapter entitled 'glorious thoughts and views on women's contains quotations from the works of eminent educationists, scholars, poets, writers, philosophers and reformers of the East and the West.

WORKERS' EDUCATION

159 ASIAN SEMINAR ON THE ROLE OF TRADE UNIONS IN DEVELOPMENT PLANNING, NEW DELHI, OCTOBER 1968: Workers' education for development planning ⌊working paper prepared by ILO⌋. Workers' Education 1969, January, 34-8.

An educational programme for three levels of leadership -

national, intermediate and local - has been proposed. The course for national leaders and representatives should consist of: 1) principles and mechanism of plan elaboration, implementation and control; 2) short and long-term consequences for workers of possible plan policies; 3) critical analysis and research data, statistics and charts provided as part of the plan documentation; 4) the technique of searching, assembling and using specialized and statistical data in support of a given trade union policy or thesis to be defended; 5) experiences of other countries. At the intermediate and specialized level the subjects of study are: 1) main social and economic issues; 2) basic economics; 3) plan machinery, place of the body where representation has to be ensured; 4) nature and function of that particular body. Since the function of local leaders is to provide information to leaders at other levels, they should have some knowledge of basic economics, the main principles, methods and purposes of planning, the educational techniques and the use of audio-visual tools needed to publicize plan features. The methods of training at different levels have also been discussed.

List of Periodicals Abstracted

Bulletin of the West Bengal Headmasters' Association: V 18, No 3
Cenbosec News and Views: V 5, No 1
Christian Education: V 19, No 1
Economic and Political Weekly: V 3, No 32
Education: V 48, No 2
Education and Psychology Review V 9, No 1
Education Quarterly: V 20, No 1
Educational Forum: V 14, No 1
Educational India: V 35, Nos 7, 8, 9
Educational Review: V 75, No 1
Educational Trends: V 3 No 1-2
Environmental Health: V 2, No 1
Geography Teacher (India): V 4, No 2
Go Teach: V 6, No 1
Haryana Journal of Education: V 2, No 1
Indian Educational Review: V 4, No 1
Indian Journal of Adult Education: V 29, No 12; V 30, Nos 1,2
Indian Journal of Applied Psychology: V 6, No 1
Indian Journal of Experimental Psychology: V 3, No 1
Indian Journal of Medical Education: V 7, No 6
Indian Medical Gazette : V 8, No 11
Journal of Association of Principals of Technical Institutions (India): V 21, No 3-4
Journal of Education and Psychology: V 26, No 4
Journal of Educational Research and Extension: V 5, No 3
Journal of English Language Teaching: V 4, No 1
Journal of the Gujarat Research Society: V 31, No 1
Journal of the Indian Academy of Applied Psychology: V 6, No 1
Journal of the Indian Medical Profession: V 15, No 12
Journal of the Mysore State Education Federation: V 22, No 3-4
Journal of Psychological Researches: V 13, No 1
Machine Tool Engineer: V 9, No 4
Maharashtra Educational Journal: V 17, No 4
Manpower Journal: V 4, Nos 2, 3
Naya Shikshak: V 11, No 1
NIE Journal: V 3, Nos 2, 3
Popular Plastics: V 14, No 1
Psychological Studies: V 14, No 1
Publishers' Monthly: V 11, No 2
Social Action: V 18, Nos 1, 6; V 19, No 1
Tamil Nadu Education: V 3, No 1
Teacher Education: V 3, No 2
Teaching: V 41, Nos 2, 3
Technical Manpower Bulletin: V 11, No 3
University News: V 6, No 12; V 7, Nos 1, 2, 3
Vigyan Shikshak: V 13, No 1
Vyayam: 1969, February
Workers' Education: 1969, January
Yojana: V 13 No 1

Newspapers:

Amrita Bazar Patrika: 13 Jan; 9 Feb
Assam Tribune: 28 Jan
Economic Times: 25 Jan
Free Press Journal: 15 Jan
Hindu: 9 Jan; 9, 30 Mar
Hindustan Times: 9 Feb
Hindusthan Standard: 27 Feb
Hitavada: 6, 23, 31 Jan; 25 Mar
Mail: 14 Feb; 6, 14 Mar
National Herald: 25 Mar
Searchlight: 7 Jan; 31 Mar
Statesman, Calcutta: 28 Mar
Times of India: 5, 8, 20, 27, 30 Jan; 8 Feb; 31 Mar

SPECIAL SECTION

SCIENCE EDUCATION

A1 ALL INDIA COUNCIL FOR SECONDARY EDUCATION: /_Recommendations on science teaching_/ (*In* National Council of Educational Research and Training. Recommendations on secondary education. New Delhi, the Council, 1966. 88-92).

The Council at its meeting held in 1957 recommended (item No.4) that extension service centres should set up science clubs in accordance with the recommendations made by the Science Committee of the Council. At its meeting held in 1960 the Council made a number of recommendations (item No.7): 1)setting up science clubs and making necessary financial provisions in the grant-in-aid programme; 2) conducting training courses and workshops to train teachers in the use, care and maintenance of apparatus; 3) appointment of science development officers in States to improve science education at the secondary level; 4) observing Ist December as National Science Day and organizing science fairs and competitions; 5) introduction of general and elective science in all secondary schools during the Third Plan; 6) setting up suitably staffed science units in State Directorates of Education; 7) strengthening science teaching in schools; 8) setting up a central institute of science during the Third Plan; 9) introduction of two-year teacher education programme for teachers and inclusion of general science as a major subject in the syllabus; 10) preparation of standardized designs for apparatus with the help of Central Scientific Instruments Organizations; 11) translation of UNESCO book for science teachers into regional languages; 12) organizing training courses for science teachers and laboratory assistants in laboratory techniques. The Council also made a number of recommendations to meet the shortage of science teachers. They include: 1) equating the salary scale of science teachers possessing postgraduate degree with that of college teachers; 2) organizing short-term certificate courses for science teachers; 3) introduction of a centrally sponsored scheme during the Third Plan for providing financial incentives to bright students at the matriculation level to induce them to take up science courses; 4) increasing the number of seats in science classes in different colleges with financial assistance from UGC. At its meeting held in 1961, the Council stressed the need for strengthening science teaching at the secondary level in the Third Plan and made several recommendations to achieve the objectives. They include provision of content courses for science teachers in four regional colleges of education to be set up during the Third Plan.

A2

ALL INDIA SCIENCE TEACHERS' CONFERENCE 13TH. AMBALA CANTT. (HARYANA). DECEMBER 1968: [Report] Haryana Journal of Education 1969, 2(1), 59-86.

The following documents have been presented: 1) inaugural address by B N Chakravarty, Governor of Haryana; 2) presidential address by A C Joshi, Vice-Chancellor, Banaras Hindu University; 3) addresses by B L Ahuja and D I Lall, Education Secretary and Director of Public Instruction respectively, Haryana; 4) valedictory address by V P Kahor of Unesco. The resolutions adopted are: 1) associating teachers with the preparation of curriculum materials taken up by various Study Groups; 2) introduction of new Science Education Programme in selected schools through the assistance of State governments; 3) introduction of examination reforms at all levels in all States; 4) building up adequate film libraries for science education; 5) conducting weekly seminars on developments in science; 6) setting up Study Groups in geology and astronomy to prepare appropriate curriculum materials in view of the Education Commission's recommendation to teach geology and astronomy as separate disciplines for one year each at the middle school level; 7) developing investigatory type activities for science clubs.

A3

BANGIA V D: Role of science consultants' service in Delhi schools. (In Central Institute of Education. Summaries of M.Ed. reports 1965-66. Delhi, the Institute, 1966. 162-72).

The Union Ministry of Education introduced a scheme for providing science consultant's service to improve the teaching of general science in elementary schools. In 1960, it was extended to 116 schools run by Delhi Municipal Corporation. The aim of the study was to determine the areas of science teaching in which science consultants could be useful to administrators and teachers. A questionnaire was administered to 35 administrators and 65 teachers. The analysis of the data showed that ratings of the 26 statements on the duties of science consultants, given by teachers, compared favourably wity those of administrators. Based on the ratings, a list of 20 statement was finalized. They include: 1) locating instructional problems and suggesting ways of solving them; 2) designing special projects for the improvement of instruction; 3) bringing to the notice of teachers relevant instructional material; 4) conducting workshops and providing in-service education in general science for teachers; 5) arranging demonstration lessons in science teaching; 6) providing incentives for devising improvised apparatus; 7) organizing science activities like science clubs and science fairs; 8) locating science talent;

9) selecting science teachers; 10) securing resource persons in science teaching; 11) preparing object-based questions; 11) developing general science curriculum; 12) making supervisory functions friendly and informal. A list of 25 suggestion an had also been appended.

A4 BHANDARI K S: Trends in science curricula. NIE Journal 1969, 3(3), 38-41.

The following principles should guide the reform of science education in India: 1) integrated approach to general science at the primary stage; 2) introduction of courses in separate disciplines from the middle stage; 3) making the middle stage both a terminal stage for students who wish to discontinue and a preparatory stage for those taking up higher education; 4) maintaining standards of content in each discipline and modernizing the curriculum; 5) making the courses more concept-oriented than fact-oriented; 6) giving emphasis on practical experience; and 7) providing children with sufficient learning experiences using simple, inexpensive and indigenous equipment. The secondary science and mathematics teaching project (in collaboration with Unesco) of the Department of Science Education (NCERT) based on these principles emphasizes the following aspects: 1) physics - at the middle school stage introduction of basic concepts and principles in mechanics, light, heat, sound, electricity and magnetism and detailed study of the same areas at the higher secondary stage; 2) biology - at the middle school level study of basic facts of life common to plants and animals, diversity of plant life and animal life, habitat of plants, classification of plants and animals, and anatomy and physiology of man, and carrying forward these concepts to deeper levels during the higher secondary stage; 3) chemistry - at the middle stage course an understanding of chemical phenomena on the basis of the atom molecular theory; the development of the physico-chemical concepts of chemistry at a higher level with the electronic structure of matter and the periodic classification as the basis at the secondary level course; 4) mathematics - the main emphasis on key ideas, their relationship and the development of the powers of thinking and reasoning and meaningful situations involving numbers. Three other projects of the Department are: general science project for primary level, mathematics for lower primary stage, and study groups project for middle and secondary stages.

A5 BHATIA R L: Teaching science in elementary schools. Naya Shikshak 1966, 8(3), 95-100.

The objectives of teaching science at the elementary stage are: 1) imparting knowledge of environment as a part of the general education of children; 2) understanding of scientific principles by the children for solving problems in the environment; 3) developing in children a scientific attitude. The present faulty method of teaching science by recitation has been attributed to two factors: a) incompetence of the teacher, b) non-availability of equipment. The following items of instruction have been recommended for the teacher at a basic STC School or a short-term training course: 1) subject matter coupled with demonstration; 2) performance of all experiments occuring in texts from class III to VIII; 3) laboratory practice; 4) making improvised equipment; 5) practice in drawing; 6) preparing simple charts and making plaster models of insects and body organs; 7) collection and preservation of specimens; 8) organizing science exhibitions.

A6 BUCH M B, PATEL J J: Science teaching in the secondary schools of the Kaira district (Gujarat) Teacher Education 1962, 6(3-4), 41-55.

The object of the survey was to collect data on the following aspects: 1) nature of the staff connected with science teaching; 2) status of school libraries and equipment; 3) extent of practical work done by pupils; 4) reading materials on science in libraries. A questionnaire was sent to 120 schools of which 108 replied. The significant findings are: 1) out of 395 teachers, 139 are undergraduates. Some of them are not trained. The workload of these teachers is heavy; 2) 85% schools have no separate libraries; 3) in 11% schools pupils do practical work individually, and 62% they work in groups; 4) only 3 government-supported science clubs exist in the district; 5) 70% schools possess books on science, but only a small number of schools subscribe to science journals.

A7 DAVE R H, MISRA R G: Evaluation in science and mathematics. Vigyan Shikshak 1969, 13(1), 45-9.

An analysis of the question papers in science of different Boards of Secondary Education reveals the following shortcomings: 1) 90-95% question papers test only information; 2) they lack questions to test the understanding or application of knowledge; 3) large-scale options encourage selective study. Suggestions for overcoming the deficiencies are: 1) planning stage: (a) laying down concrete and realistic objectives in terms of student behaviour, (b) equipping students with processes and procedures for acquiring the latest available knowledge; 2) teaching stage: (a) using a combination of demonstration and problem-solving methods, (b) giving sufficient scope for activities on the part of pupils; 3) testing stage: (a) designing tests not only to classify students but also to effect improvement in students as well as in the teaching-learning process, (b) basing, testing and observation in a lesson mainly on development of understanding and application of knowledge. Question papers should cover a variety of objectives, give a comprehensive coverage of the content, and contain a variety of questions. A carefully developed scheme of scoring would minimize subjectivity in evaluation.

A8 Enquiry into the conditions of teaching science in secondary schools. South Indian Teacher 1962, 35(2), 23-79.

Reports the result of a questionnaire survey organized to evaluate the facilities offered for science teaching in secondary schools in Madras State and to find out whether they meet the demands of the science syllabus in terms of space, equipment, teacher equipment and teaching load. The questionnaire was sent to all recognized secondary schools in Madras and about 21% responded. Some significant findings are: 1) there is a great need for improving laboratory space equipment and chemicals to facilitate effective teaching; 2) 40% of the schools do not possess any audio-visual equipment. When they are used, there is no adequate previous preparation for observation and useful follow-up work for re-enforcing the ideas already gained. Some schools do not even consider them as indispensable to science teaching; 3) frequent practical demonstrations by teachers which are indispensable to instilling facts and principles of science are also absent in a large majority of schools; 4) deficiency of school equipment has been attributed to lack of funds; 5) teachers can make use of extension services and science clubs to improve teaching; 6) the competence of science teachers of middle schools needs improvement for preparing students intending to study science in high schools; 7) in spite of qualified science teachers, science teaching could not be improved due to lack of instructional materials.

A9 GREEN T L: Social significance of science education in India. Teaching 1956, 29(1), 4-10.

Discusses the objectives, contents and the techniques of teaching science. Science education should lead to an understanding of the major principles of science and its relationship with the society and the individuals. It should not merely provide information, but develop in students incentiveness and a capacity for critical thinking. As regards teaching method, the project method has been recommended. A project is a learning activity developed jointly by the teacher and student in a setting of reality and aimed at solving a problem. The significance of the method lies in providing opportunities to each student to work according to his capacity and interest. The project deals with realities rather than with abstraction of the purely academic.

A10 INDIA. CENTRAL ADVISORY BOARD OF EDUCATION: /Recommendations on science teaching/ (In National Council of Educational Research and Training. Recommendations on secondary education. Delhi, the Council, 1966. 88-9.)

The recommendations made by the Board in different meetings are: 1) 1958: In view of the acute shortage of equipment of standard specifications, the Ministry of Education should vigorously pursue the proposal for the establishment of a scientific instruments centre with the cooperation of the Ministry of Commerce; 2) 1960: steps should be taken to provide for teaching general science in all secondary schools, and elective science in all higher secondary and multipurpose schools by the end of the Third Plan. To meet the demand for science graduates (B.Sc. Hons/M.Sc), facilities in existing colleges should be expanded, new colleges should be opened and existing teachers should be prepared through condensed courses. To overcome the shortage of trained women science graduates, women teachers may be employed on a part-time basis and even men teachers may be appointed in girls' schools as a provisional measure.

A11 INDIA. COMMITTEE ON PLAN PROJECTS. PANEL FOR SCIENCE EDUCATION IN SECONDARY SCHOOLS: Report. New Delhi, the Committee, 1964. 67p. /Chairman: Dr K N Mathur/

The terms of reference of the panel were: 1) laying down specifications and standards for science equipment and apparatus for high/higher secondary schools; 2) standardization of the procedure for allotment of funds and procurement of scientific equipment; 3) preparation of standard lists of scientific equipment and apparatus; 4) preparation of designs and lay-outs of science laboratories. The second chapter deals with the detailed proceeding for allotment of funds and procurement of equipment. It has been observed that the existing procedure is quite unsatisfactory and results in various malpractices besides hampering classwork considerably. The panel had recommended a definite schedule so that financial sanctions are issued to schools at least six months ahead of the new academic session. The requirements of scientific equipment have been discussed in the third chapter and standard lists of equipment have been drawn up (appendices 3-6) to serve as a guide. Allocation of financial grants for the purchase of equipment has also been recommended. Manufacturers of standard scientific instruments are reluctant to undertake any large-scale manufacturing programme because of the defective system of purchase which encourages the purchase of sub-standard equipment. The panel had, therefore, suggested that purchase standard should be framed with stress on qualitative aspect. The State government should estimate requirements of scientific equipment on five-year basis and the Planning Commission may take up the question of production with the manufacturers. The National Council of Educational Research and Training should set up a semi- autonomous agency which would lay down standards for science apparatus. The teacher education programme should lay emphasis on training in workshop methods to enable teachers and students to make components of simple equipment themselves and undertake simple repairs. In the fourth chapter, basic requirements for planning laboratories have been discussed and suggestions have been made on laboratory space, lighting, laboratory services, and materials and methods for construction. The suggested laboratory design has been given in the annexure. The creation of a separate branch of science education in each State Department of Education under a special officer has been recommended for the improvement of science teaching. He should be assisted by science inspectors functioning at district levels.

A12 INDIA. COMMITTEE ON PLAN PROJECTS. PANEL FOR SCIENCE LABORATORIES AND EQUIPMENT: Report on science laboratories and equipment in high/higher secondary schools. New Delhi, the Committee, 1962. 42p, [Chairman: Dr K N Mathur]

The panel had made detailed recommendations in respect of planning of accommodation, services and the arrangement of work-tables in laboratories (Chapter II). Detailed lay-outs of laboratories are given in appendix II. An exhaustive study has also been made of the various items of apparatus and equipment needed for high/higher secondary schools, and giving due weight to the availability of funds, such items have been categorized as essential, desirable and supplementary (Chapter III). Detailed lists have been given in appendix I. Other recommendations are: 1) The Indian Standards Institution (ISI) and the Central Scientific Instruments Organizations should be requested to lay down specializations for equipment and apparatus now manufactured in the country; 2) grants for procurement of equipment should be paid before the schools close for the summer vacation so that orders may be placed before the schools reopen; 3) setting up a centralized agency for the manufacture and procurement of scientific equipment is not necessary. A rational system of purchase and strict adherence to the existing specifications of ISI would solve the problem of procurement of apparatus; 4) each practical class should be guided by two demonstrators; 5) the possibility of two or more schools collaborating in practical work should also be explored to reduce the cost of setting up new laboratories. Although the recommendations primarily relate to syllabus prescribed by the Central Board of Secondary Education with minor adjustments, they are also applicable to schools in other States.

INDIA. EDUCATION COMMISSION: Science education and research. (In Report of the Education Commission (1964-66) - educationa and national development. Delhi, Manager of Publications, 1966. 389-421, 661-5).

/_ See abstract no.379, Indian Educational Material V.1, No.1_/

A13 INDIA. PLANNING COMMISSION. EDUCATION DIVISION: Science education in the Fourth Plan - school stage. (In India. Planning Commission. Planning Group on Education. Steering Committee. Educational development in the Fourth Plan (1969-74) - report of ... New Delhi, the Commission, 1968. 145-60.)

Although considerable expansion of science education had taken place during the three Plans, an assessment of the existing position shows that the physical facilities, qualities of programmes and teacher competency are unsatisfactory, with the result that science is mostly taught through reading activity like any other non-science subject. This can hardly bring about the desired attitudinal changes. Realizing the importance of science and taking into account the present position of science education, the following proposals have been made for inclusion in the Fourth Plan. A. Elementary level - 1) strengthening the existing 1400 teacher training schools with laboratory and workshop equipment; 20 provision of science teachers in 21,000 primary schools; 3) in-service training of 21,000 primary school teachers of selected schools; 4) provision of mobile laboratory-cum-training vans in 150 selected educational districts. B. Middle stage - 1) establishing 150 science training centres in selected science colleges; 2) in-service training programme for existing (40,000) science and mathematics teachers working in middle schools; 3) provision of science study room and equipment for 20,000 selected middle schools. C. Secondary level - strengthening of State Institutes of Science Education to develop curriculum in science and mathematics, to prepare better instructional material, to organize in-service courses for teachers, and generally to assist the State Directorates of Education in all matters relating to science teaching; 2) setting up science units in Directorates of Education; 3) appointment of science supervisors at the district level; 4) organizing pre-service training of science and mathematics teachers in 15 selected universities; 5) construction of additional laboratories in secondary schools; 6) supply of equipment to new and existing institutions; 7) provision of laboratory and equipment for elective courses in science in twelve-year schools; 8) provision of science equipment for the laboratories of existing teacher training colleges; 8) two-month in-service programmes for 10,000 secondary school teachers. D. Out of school activities - 1) establishing science clubs in 10,000 secondary schools; 2) organizing science fairs; 3) training courses for the sponsors of science clubs; 4) establishment of science museums in 10 States. The proposed allocation for the entire programme is Rs.645.7 million (detailed break-up given in appendix A).

A14 INDIA. SECONDARY EDUCATION COMMISSION (1952-53): General science (In its report. New Delhi, Manager of Publications (for Ministry of Education), 1965. 77).

Introduction of general science courses at the middle stage had been recommended to facilitate students' adjustment to their natural environment and to provide the proper background for the more specialized studies later. Special emphasis should be laid on demonstrations, field trips, and practical projects which would link school science with actual life problems and situations. Science teaching at this stage should initiate students into the use and appreciation of scientific methods. The rich resources within and outside the classroom should be fully utilized. Creating in students a curiosity for the natural phenomena, developing their capacity for the practical application of their knowledge, making them appreciate the impact of science on society and also the human aspect of scientific progress would make science a part of liberal education.

A15 INDIA. UNIVERSITY GRANTS COMMISSION: Note on science education and manpower. Delhi, the Commission, May 1966. 4p.

There has been a growing awareness and desire in India for education in science and science-based courses. The number of students who received B.Sc. degrees in 1963 was 31,638 as against only 9,628 in 1950 (annual growth 9.6%). The output of M.Sc's rose to 5,845 in 1963 from 984 in 1950 (30.2%). The corresponding figures for engineering and technology are 9227 in 1963 and 1660 in 1950 (14.1%) and for agriculture and veterinary science 4872 and 1100 (12.1%). The number of doctorate degrees in science and technology has increased from about 100 in 1950 to 540 in 1963 (13.9%). The outputs have been shown as percentage of the total population in the relevant age group to indicate their manpower implications. The input and output comparison in the field of higher education in India and some other countries has been shown in a chart. Two tables reproduced from NAS Panel report (Physics: survey and outlook 1966) indicate the scale of US effort in physics and the projections for 1969. They show that the current output of M.SC's in India is less than the output of doctorates in science and technology in the USA.

A16 INDIAN PARLIAMENTARY AND SCIENTIFIC COMMITTEE (1963): Science education in schools - report of the ... Committee. Science in Parliament 1963, 1(2), 38-42.

The following suggestions have been made: 1) introducing science education in primary schools in the form of nature study; 2) starting general science courses in middle schools i.e., classes VI-VIII; 3) making science compulsory at the high school stage and teaching it in the form of separate subjects such as mathematics, physics, chemistry, biological sciences etc. along with other humanistic subjects; 4) providing optional or elective science at higher secondary stage of one year more, or junior college stage of intermediate level of 2 years, after high school; 5) avoiding specialization at an early stage of school education and framing courses in such a manner as to enable the students coming out of the high school at the age of 16 plus or 17 after completing 10 years of schooling either to pursue an occupation or training or to take up higher academic education; 6) modernising school curriculum; 7) production of high quality school textbooks; 8) conducting summer institutes for secondary school teachers; 9) creating a special cell in the University Grants Commission to study the problem of designing plans of buildings and laboratories for colleges and high schools; 10) providing students low-cost textbooks and simplest apparatus; 11) giving credit to records and practical work of students in the examinations; 12) undertaking a study of the problems of training of science teachers and their conditions of service by the Ministry of Education.

A17 JOHRI B M, MANOHAR LAL: India's action programme for improvement of school biology. School Science 1967, 5(4), 291-4.

Some projects launched for the improvement of biology education in schools have been described. The Education Department of Delhi State conducts a two-year in-service diploma course in botany and zoology for junior science teachers of higher secondary schools. The National Council of Educational Research and Training (NCERT) had prepared a biology textbook for higher secondary schools adopting, for the time being, a modernized traditional approach to the subject. An abrupt change to the most modern practices would have disturbed the teaching arrangement. NCERT had also set up five study groups for preparing curricula and textbooks at two levels (classes V, VI and VII, and classes VIII, IX and X). Programmes for textbooks also include adaptation of BSCS books of the USA. US collaboration through two agencies (NSF and USAID) covers the following programmes: 1) development of instructional material; 2) cooperative university college-school programme; 3) college faculty development programme; 4) short-term institutes; 5) programme development and special project. The newly established National Council of Science Education would operate the programme on behalf of India. During the past 5 years, 12000 Indian college and school teachers had undergone training in 352 summer institutes. A new journal "Science Newsletter" devoted to the improvement of science education in India has been brought out.

A18 JOSHI A C: Contemporary thinking on school science education. Vigyan Shikshak 1964, 8(1), 13-19.

In his presidential address at the 8th All-India Science Teachers Conference at Ahmedabad in 1963, the author discussed the current thinking on science education in other parts of the world to find out its relevance for the improvement of Indian science education at various levels. Although recruitment, education and training of teachers are extremely important for improvement, very little effective steps had been taken to implement the necessary programmes for achieving the objective. To cope with the increasing demand of science teachers during the Fourth and subsequent plans there is need for a long-term approach, because the preparation of a science teacher for secondary schools would require generally 5 to 7 years of study after completing the high school course.

A19 JOSHI A C: Progress of science education since independence. Vigyan Shikshak 1966, 10(1), 1-11.

A review of the development of science education during the first three Plan periods has revealed the following shortcomings: 1) absence of elective science course; 2) paucity of science teachers; 3) poor laboratory facilities and lack of equipment in teacher training colleges. Some proposals included in the Fouth Plan to strengthen science education are: 1) determining the aim of science teaching in primary and secondary courses of studies; 2) measures for reviewing courses of studies, training of science teachers including refresher courses; 3) preparation of textbooks, demonstration and laboratory apparatus and other teaching aids; and 4) introduction of a comprehensive scheme for reorganization and strengthening of existing facilities.

A20 JOSHI A C: Scientific and technical education at the elementary and secondary level. (In Shah A B, Ed. Modernization of university teaching - teaching of natural and social sciences in India. Bombay, Nachiketa Publications, 1969. 9-25).

The main objective of science teaching at the primary level is to orient the students in the scientific method of problem-solving through systematic observation and carrying out simple experiments. At the secondary/higher secondary stage two types of courses should be introduced : general science and elective science. General science should aim at preparing an individual for effective citizenship and fruitful living. Students preparing for a scientific and technical career should take up elective science. Schools should have workshops as the connecting link between scientific and technical education. Inclusion of mathematics in the syllabus would serve as a link between liberal and technical education. Two alternatives have been suggested for preparing science teachers: 1) four-year programme after the higher secondary stage, in which content of science and pedagogy should be integrated; 2) one-year programme for training in pedagogy after graduation. Training in improvisation of apparatus should also be included. For the existing teachers, one-year course in content of science, and frequent refresher course should be organized. The need for laboratories, teaching aids and instructional materials has been stressed. Science clubs with the following aims should be set up: 1) inculcating a scientific attitude in pupils; 2) encouraging the pursuit of science as a hobby; 3) stimulating pupil participation and initiative in learning science; 4) encouraging pupils in taking an intelligent interest in the local environment and everyday experiences; and 5) encouraging individual and group initiative of the inventive type.

A21 KOTHARI D S: Scientific terminology and scientific progress. Vigyan Shikshak 1962, 14(3), 74-6.

Discusses the problem of scientific terminology in regional languages in view of their introduction as media of education. For the successful completion of the postgraduate course in science and for courses in professional subjects like engineering and medicine, adequate knowledge of English is essential. At the undergraduate stage use of terms both in English and in regional languages has been recommended. Regional languages should be used as the medium of school education and for the training of craftsmen and skilled workmen. Use of regional language is also necessary for the popularization of science. In selecting or evolving scientific and technical terms in Hindi efforts should be made as far as possible to choose words which are common in different regional languages. The transliteration technique should also be used to suit different grammars. In coining new Hindi words, the possibility of using current English words should also be explored. Instead of trying to find new Hindi terms, incorporation of suitable English words would enrich the language.

A22 LAROIA B D: Strengthening science education in India. Educational Quarterly 1960, 12(46), 147-51.

Reforms in science education should be aimed at revising curriculum and the mode of instruction, increasing the physical facilities for science teaching and ensuring the appointment of qualified teachers. Since science is developing at a rapid pace, a permanent body should be set up for the continuous revision of the syllabus, preparation of new instructional material, revision of textbooks and devising new and inexpensive equipment for laboratories. Efforts should also be made to locate suitable students with aptitude and ability to serve as science teachers in schools. Modification of the existing examination system is also necessary. Science exhibitions should be organized and attempts should be made to locate science talents in schools.

A23 MITTAL D S: How to make the science lesson interesting. Progress of Education 1960, 34(6), 207-8.

The following suggestions have been made to make science teaching meaningful and interesting to pupils: 1) using the inductive method of teaching; 2) introducing the aim of lessons in the form of a problem; 3) using different visual aids to illustrate scientific principles; 4) integrating science museum with science library and ensuring that pupils collect material for the museum; 5) equipping the science room with visual aids prepared by pupils; 6) developing the power of observation in pupils by demonstrating experiments and showing indigenously produced apparatus; 7) using the method of problem-solving and experimentation to impart practical knowledge; and 8) linking up science teaching with field activities.

A24 **MUKERJEE S C:** Science education in primary schools and the training of teachers. Buniyadi Talim 1963, 5(3), 150-3.

Science teaching in primary schools has great scope for improvement. In any programme of improvement of science education, attention should be concentrated on the curriculum, teaching method, system of evaluation and preparation of teachers. A short-term programme for training of teachers should consist of: 1) frequent visits to different schools; 2) intensive in-service education of teachers through seminars, workshops and refresher courses; 3) publication of periodicals containing articles on classroom problems; and 4) inter-school visits to gain from mutual experiences and to observe good lessons. A long-term programme on the other hand should ensure that: 1) every training college has at least one science teacher who understands the basic aspects of studying general science and who is capable of creating in trainees an interest for the subject; 2) it has a well equipped library; and 3) it has a good hobby centre.

A25 **NATIONAL COUNCIL OF EDUCATIONAL RESEARCH AND TRAINING:** Science in our schools. (In its Annual report, New Delhi, the Council, 1968. 45-8).

Some measures initiated by the Department of Science Education for the improvement of school level science education are: 1) general science project for the primary school - activities include the preparation of a syllabus of general science for classes I-VIII, preparation and publication of handbook of activities for classes VI-VIII based on the syllabus, and teachers' handbook of activities; 2) experimental project for the improvement of teaching science and mathematics at the middle level - the work involves three phases: (a) development of the revised syllabus, trial text materials, teachers' guides and curriculum guides, and specialized equipment for try-out in selective schools, (b) study and revision of curricular materials on the basis of feedback received, (c) final revision of all the materials. Under the project a number of trial editions, teachers' guides and curricular guides have been prepared and are currently being used in about 110 Central Schools and 31 experimental schools in Delhi; 3) comprehensive scheme for the improvement of science education - 20 study groups in mathematics, physics, biology and chemistry had been set up at various university centres which are at present engaged in producing curricular materials needed for the first level of the secondary schools. Preparation of materials for higher level are also being envisaged; 4) Unesco-Unicef project - the Department is actively associated with the project engaged in equipping the key training institutions with laboratory equipment for efficienctly carrying out pre-service and in-service programmes for teachers; 5) development of instructional materials (teaching units) - the work is conducted by writing groups attached to various extension services centres. The main feature of these units is the incorporation of up-to-date content and new techniques and methods of instruction; 6) improved teaching aids - the Department is working in close collaboration with the Central Science Workshop in producing prototypes of scientific apparatus and equipment needed for the teaching of experimental syllabi of different disciplines of science.

A26 PANANDIKAR S: Science and curriculum. Teaching 1969, 41(3), 65-9. 3 ref.

Emphasis on science education should not lead to neglect of other subjects creating a serious imbalance in the curriculum. Objectivity and rationality do not belong exclusively to science, nor is creativity necessarily associated exclusively with the arts. Development of science does not take place in isolation, as it has impact on all aspects of life and study. Modernization cannot be confined to science education alone and therefore all the schemes envisaged for the development of science education should be considered equally necessary in other fields. Social studies clubs similar to science clubs should therefore be set up and the National Science Talent Search Scheme should be extended to locate general talent. Such an approach would not weaken the case of science education. Science would draw sustenance from the other subjects which in their turn would benefit by science.

A27 PREM NATH: Scope and place of science and technology in general science. Education and Psychology Review 1963, 3(2), 149-50.

The criticisms of the course in general science embracing the most fundamental concepts in biological and physical sciences and scientific methods by the protagonists of subject specialization are not justified. Without dividing science into specific disciplines, it is possible to convey the most important concepts of each and to have at the same time a generalized idea of its allied branches. The specific purpose of teaching general science is to enable students to transfer concepts and training in one subject to other fields. Science teaching should be aimed at critical understanding and creative problem solving. Activities in science cannot be divorced from the laboratory method. A limited number of laboratory experiments and observation of physical phenomena outside the class room are essential for the growth of scientific habits. If students are encouraged to get themselves involved in practical work, they would be able to enjoy science as a leisure-time activity and to appreciate its role in developing the society.

A28 RADHANATH TRAINING COLLEGE, CUTTACK. BUREAU OF EDUCATIONAL RESEARCH: Teaching of general science in the secondary schools of Orissa (In National Council of Educational Research and Training. Educational Studies and investigations, New Delhi, the Council, 1962. 81-94).

The report is based on a questionnaire survey conducted in 1959 in which 113 high school teachers and 10 school administrators participated. The significant findings are: 1) more than 50% teachers and administrators agree that the objectives of science teaching in secondary schools are: (a) development of powers of accurate observation, (b) creation of interest in science, (c) development of logical thinking and reasoning, (d) development of the habit of inquiry, (e) understanding the fundamental principles of science and their application in life and nature, and (e) application of scientific knowledge; 2) most teachers and administrators feel that science should be broken up into its constituents, (f) the existing science syllabus is inadequate and inclusion of principles of agriculture in the science syllabus had been recommended; 3) opinion is divided on the question of inclusion of astronomy and geology in general science course; 4) all favoured a stress on practical aspects; 5) use of simple projects for teaching science was favoured by most respondents; 6) most schools do not have laboratory facilities and adequate scientific apparatus; 7) although there are no science clubs in most schools, discussion groups are organized in some schools; 8) laboratory service is inadequate in most schools; 9) most respondents consider the present system of examination unsatisfactory and are in favour of both objective and essay type questions; 10) introduction of practical and oral examinations and considering the class performance to decide the final result have been recommended by most respondents.

A29 SANYAL N K: Science education. (In Mukherji S N, Ed. Education of teachers in India. Vol. 1. New Delhi, S. Chand & Co., 1968. 373-99).

Development of a common programme of science education for the school population throughout the country has been urged. Two types of courses have been envisaged: (a) a general course compulsory for all students up to 10th class and (b) an elective course for students who pursue higher education. A three-stage national curriculum should be developed: (a) Stage 1 (classes I-V): compulsory general science; (b) Stage II (classes VI-VIII):

(c) Stage III: 1) IX-X: compulsory core programme in science for non-science students. XI: a course in one advanced branch of science; 2) X-XI: additional knowledge in one branch for higher ability students only. The programme suggested for training science teachers are: 1) introducing a two-year pre-service training course for elementary teachers which should include the following items: (a) general education in mathematics and science equivalent to that of the secondary level; (b) relevant pedagogical course for teaching at the elementary level, (c) thorough study of the syllabus that the teacher is expected to teach in future; (d) observation lessons, supervised practice lessons and criticisms in the subject, (e) workshop practice and training; 2) organizing the curriculum for secondary school teachers comprising (a) general education, (b) professional education, (c) practical work (30% of the training period, (d) practice teaching in two subjects and internship (20% of the time); 3) organizing periodic in-service training, and refresher courses for teachers; 4) organizing correspondence and evening courses for (a) untrained B.Sc. teachers, (b) teachers of humanities with B.A. who wish to become science teachers, (c) undergraduates; 5) The Science Consultants' Scheme should be expanded to form an effective link between planning and execution. Production of textbooks and other instructional material has also been stressed.

A30 SAXENA K N: Science education - a new perspective. Vigyan Shikshak 1967, 11(2), 12-14.

Production of standard textbooks, better training of teachers and identification and fostering of scientific talents have been suggested for augmenting science education at the school level. Indigenous resources should be pooled for writing the books and they should be written by school teachers based on the school standards. As in Japan, all teachers should undergo the same type of university education with added courses in pedagogy, psychology and school administration. The summer institution programme should be decentralized and run by the State Institutes of Science Education in co-operation with allied agencies. These actions should be preceded by developing an indigenous national syllabus along with the production of standard and creative textbooks, supplementary books, and teaching manuals. Every teacher should undergo an intensive summer course sharply oriented towards the content at least once every five years. NCERT through its National Science Talent Search Scheme has taken up the task of identification of science talent at the end of the higher secondary stage and awarding scholarships for pursuing higher education up to the doctorate level.

A31 SAXENA K N: Science talent search scheme - an analytical survey. Vigyan Shikshak 1969, 13(1), 35-40.

The selection procedure consists of a science aptitude test (SAT), an essay, a project report, and an interview. Statistical analyses of the data relating to the selection for the years 1963-66 revealed the following: 1) SAT along with allied techniques seems to be a valid tool for indicating the scientific aptitude of students; 2) contrary to the general notion, quite a large number of brilliant students opt for the basic sciences in preference to professional courses; 3) correlations between science talent search (STS) scores on the one hand and the Minnesota Paper Board Form Test and Abstract Reasoning Test on the other are significant; 4) inter-correlations between the following factors are also highly significant: (a) self-confidence, (b) laboratory skill, (c) scientific attitude, (d) inventiveness, (e) aptitude for science, (f) initiative, and (g) self-confidence; 5) significant correlations exist between total scores at the STS examination and the B.Sc. first year examination; 6) inter-correlations between the four criteria of selection yield a low figure indicating that there is a little overlap in the various tools utilized; 7) correlative study between STS scores and science activities, prizes and awards received, level of aspiration, literature reading habit and the individual experimentation are generally significant, though the relationships are not very strong. This indicates that these variables explain only a small part of the variation in the STS scores or taken singly must be useful in predicting the individual's STS scores; 8) inter-State distribution of awards clearly demonstrates the great variation in educational standards and academic facilities in different States; 9) inter-Board variations of interview scores are very significant. Based on these analyses a number of topics have been suggested for further investigation.

A32 SEMINAR ON THE TEACHING OF NATURAL SCIENCES, CHANDIGARH, 1965: Statement issued by the Seminar. (In Shah A B, Ed. Modernization of university teaching - teaching of natural and social sciences in India. Bombay, Nachiketa Publication, 1969. 184-90).

The seminar discussed the problems of science teaching at school and college levels in general and also those relating to the teaching of specific sciences, and made 30 general and 17 specific recommendations. The important recommendations are: 1) science education should commence at the elementary stage and should be compulsory up to the school leaving age; 2) science talent search scheme should be more widespread; 3) elementary level curriculum should be related to the environment; 4) school education should extend over a period of 12 years from the age of six, since rapid growth of science demands a greater maturity of mind;

5) two types of science courses should be introduced at the university level: (a) a combined course in three disciplines of equal intensity; and (b) a course leading to specialization in one major subject along with the study of other ancillary subjects; 3) UGC in collaboration with manufacturers of scientific instruments should develop suitable centres for making specialized apparatus for laboratories; 4) steps should be taken for smooth transition from one level of education to another; 5) teaching at the first degree level should lay emphasis on the internal coherence and present state of development of sciences; 6) historical orientations should be given at the postgraduate stage; 7) Master's degrees should be awarded only by papers and not by research; 8) learning one foreign language should be a pre-requisite for research work; 9) all-India committees should be set up for drafting model syllabi for all units of education. Other general recommendations emphasize participation of postgraduate students in seminars, tutorials for undergraduates, in-service training programmes for college teachers, production of inexpensive instructional material, and careful selection of students. The specific recommendations deal with the topics to be stressed in the study of different disciplines of science, teacher-students ratio in practical classes (1:10 at the postgraduate and 1:15 at the undergraduate stage).

A33 SHAH A B: Science education in India (In Shah A B, Ed. Modernization of university teaching - teaching of natural and social sciences in India. Bombay, Nachiketa Publications, 1969. 37-43).

Planning of science education had degenerated into a series of ad hoc expenditure-oriented projects in the absence of a specific formulation of the purpose of science education and the methods of attaining it, and periodical evaluation of the results achieved. The teaching of science at the university level should give the students a coherent picture of the processes of nature, and an insight into the historical growth of science as an expression of the creative spirit of man, bringing out the interaction between science, social structure, technology and thought of each period of history, and providing a sound understanding of the basic findings and major techniques of the discipline studied. Accordingly, two types of courses should be introduced: 1) a general integrated course in major theories of natural science and in the methodology of science; 2) subject courses, optional as at present, but with some modifications. In the latter courses, besides major subjects of study, the student should read a number of minor subjects. Courses in minor subjects should be designed keeping their instructional role in view. Implementation of these two courses would cost 0.4% of the total outlay of the three Plans. Acceptance in part of the recommendations of the Secondary Education Commission and the University Education Commission had made the three-year degree course less satisfactory than the four-year post-matriculation course. The U.G.C. should not merely function as a distributing agency for the funds made available by the Union Government but also provide leadership to the universities.

A34 SHAH G B: Teaching of general science. Teaching 1963, 35(3), 92-4.

The need for teaching general science in school has been stressed as it helps an intelligent understanding of one's environment, develops the ability to apply scientific principles to common situations, facilitates understanding of the cultural aspects of science, forms hygienic habits, and develops necessary skills in students desirous of specializing in science. When the pupils have developed an understanding of the cultural aspects of science, they should gather information about the lives, problems and achievements of great scientists. They should also be able to understand the impact of scientific inventions on the society and the constructive and destructive potentialities of science. Instead of confining the teaching within the classroom, a teacher can profitably exploit local resources in order to give students a first hand knowledge of scientific phenomena.

A35 SHAH K B: Community science centre. School Science 1968, 6(1), 62-4.

Describes the programme of the Community Science Centre, Ahmedabad, set up under the auspices of the Nehru Foundation for Development, with a financial grant from the Asia Foundation: 1) enrichment and improvement programme encompassing three activities new curriculum and materials development, in-service teacher's training through week-end discussions, refresher courses and summer and winter institutions, and gifted student programme; 2) experiments in science education involving a core programme and an audio-visual programme. In the core programme, participants at three levels are taught the following: (a) elementary level - posing relevant questions, selecting a workable hypothesis, searching for proof, uncovering new relationships, and adhering to ethical standards and values, (b) higher level - project design, collection of data, assessment of data, classification, and measurement, (c) highest level - description of experience, creation of experience, and the understanding of experience. Adequate facilities would be provided to the participants to prepare and produce audio-visual aids like slides, films and tapes. Other activities of the Centre are: 1) accumulation, evaluation and communication of all material being developed by other national and international agencies; 2) publication of teacher's manuals and resource material for existing syllabi and also for the new programmes developing at the Centre; 3) arranging periodical lectures, demonstrations, film shows, and science exhibition; 4) organizing seminars at regional, national and international levels to discuss new problems of science. The Centre also provides facilities for library, museum, workshop, laboratory, consultation, and national and international exchange.

A36 SHARMA P K: Evaluation and examination in science. Teaching 1969, 32(2), 52-7.

Evaluation should not be limited to an assessment of the theoretical mastery of facts and principles but should be extended to other aspects of the students' growth, such as reflective thinking, scientific attitude, creativeness and social sensitivity. A comprehensive evaluation programme in science would include achievement test and diagnostic and prognostic tests, frequently supplemented by essay-type and short-answer type tests. Use of diagnostic test in conjunction with personal interview is helpful in identifying difficulties in learning science and prescribing remedial measures. Tests administered at frequent intervals would enable teachers to judge completeness of learning. Maintenance of systematic records of progress in theoretical studies, practical work and co-curricular activities would give a true picture of the achievement.

A37 SHARMA S P: Planning for science education at fundamental level. Vigyan Shikshak 1965, 9(4), 56-60.

The objectives of teaching science at the fundamental level should be : 1) imparting knowledge of biological, physical and material environment in the form of nature study; 2) developing scientific attitude such as objective outlook, spirit of enquiry, truthfulness, inventiveness, accuracy and precision etc. Some of the suggestions are: 1) laying emphasis on an understanding of environment, of force at work in nature, of modern technological society and of acquiring simple skills; 2) organizing extra-curricular activities like botanical and zoological tours, museums, science clubs and science fairs; 3) adoption of a personalized approach in teaching, exploring the interest of the child and arousing his interest in his environments; 4) organizing summer institutes in all district headquarters for the reorientation of teachers; 5) appointing, in every State, a special officer for science education, and science consultants at State and district levels; 6) dividing the science education expenditure between the Centre and the State in the ratio 75:25.

A38 **SINGH L C**: Understanding as an outcome of science teaching. Vigyan Shikshak 1957, 1(4), 19-23.

Teaching methods in science often ignore the fact that development of understanding in the context of the material and methods of science is one of the most important objectives of science teaching. The evaluation of pupil's attainment is necessary to determine how far these objectives are being realized. Such assessment is possible only when the purpose of teaching is clear and when the right kind of teaching and learning experiences could be planned. Three stages have been suggested in conducting a test for the evaluation of understanding as an outcome of science teaching: 1) statement of the objectives; 2) breaking up an objective into behavioural patterns; 3) preparing test items which would aim at assessing some desired forms of behaviour.

A39 **TRIVEDI G R**: An experimental project on the teaching of science. Secondary Education 1960, 5(1), 26-32.

Presents an account of a project conducted by the science department of the R.N. Trivedi New Education High School, Ahmedabad with students of standard IX. It was felt that the content of general science should emerge out of the every-day life of the pupils. Accordingly, the prescribed syllabus was modified and reframed in terms of scientific units and problems related to the commuity from whicy the pupils were drawn. To inculcate in pupils the scientific way of solving problems, different projects were evolved to suit the sub-topics comprehended in each unit. To assess the effectiveness of the new project, the following steps were taken: 1) the number of books and periodicals consulted by the pupils besides the prescribed textbooks was noted; 2) the pupils in the control and experimental groups were given an achievement test at the end of the project; 3) the initiative shown by the pupuls and their behaviour in groups, their interests and attitude were also observed. The result showed that the pupils of the experimental groups took more interest in their work and did their studies more thoroughly. Teaching becomes more interesting when the syllabus is reorganized in terms of scientific problems related to every-day life. Compared with the traditional lecture method, the following approaches were better suited to teaching science: 1) excursion; 2) project work; 3) constructional approach; and 4) exhibition approach.

A40 UNESCO PLANNING MISSION FOR THE TECHNICAL ASSISTANCE PROJECT IN INDIA FOR IMPROVEMENT OF SECONDARY SCHOOL SCIENCE TEACHING (1964): Report ... Science and mathematics education in Indian schools. New Delhi, National Council of Educational Research and Training, 1965. xi, 215p.

The development of science and mathematics education in schools has been surveyed and recommendations have been made on the following topics: 1) objective and tasks of science and mathematics education in schools; 2) place of science and mathematics in the school curricula; 3) science and mathematics education in classes I-VIII and classes IX-XI; 4) implementation of the tasks of polytechnic education in the process of teaching science and mathematics; 6) methods of teaching science and mathematics; 7) development of interests, aptitudes and abilities in science and mathematics in pupils; 8) textbook preparation; 9) layout and general equipment of lecture rooms and laboratories in physics, chemistry and biology; 10) teaching equipment for science and mathematics education; 11) establishment and organization of work in the Central Science Workshop (National Council of Educational Research and Training)a for manufacture of teaching equipment; 12) training of science and mathematics teachers; 13) research in science and mathematics education. The sequence and time of implementation of the recommendations, and the content of work of another group of experts to follow the present mission forms the last part of the report. A separate report by Ralph Buchsbaum on teaching of biology, and another by Dr Paul Kirkpatric on the status of science education in India, procurement and training of teachers, equipment of science teaching, curricula and evaluation, and textbooks and other literature have been appended. The latter report contains some specific recommendations to UNESCO for the improvement of science education in India.

A41 VAIDYA N: Science teaching in India (In his Problem solving in science. New Delhi, S. Chand & Co., 1968, 12-35) 22 ref.

The major drawbacks of the present system of science teaching in India are: 1) emphasis on oral teaching and lack of adequate practical work; 2) absence of efforts to implement the aims and objectives of science education spelled out on papers; 3) lack of differentiated and sequential curriculum (psychologically or empirically) determined for various categories of students; 4) dependence on prescribed textbooks alone which are mostly of low quality; 5) using outdated methods of teaching and absence of any training in scientific method, problem solving, creative thinking and the development of scientific skills, interests, attitudes, and appreciations; 6) low standard of the B.Sc. course and professional teacher training with no relevance to classroom conditions; 7) lack of supervision and expert guidance in science teaching; 8) absence of any research in science education. Discussing the measures adopted during the first three Plans to build up an effective science education programme and the recommendations of various Commissions and Committees for upgrading and improving science teaching, the author had recommended the adoption of a less ambitious and realistic course of action.

A42 WANCHOO V N: Mathematics and science education in Indian schools. Delhi, All-India Science Teachers' Association, 1965. 136p.

Present a review of the problems relating to the teaching of science and mathematics in India. In preparing this report the author had made use of the resolutions adopted at the annual conferences of the All India Science Teachers' Association and the confernence on science teaching in Asian countries organized by the World Federation of the Organizations of the Teaching Profession (December 1964) held at Manila, the experiences of his visit to the National Centres of curriculum improvement in science and mathematics in USA and UK, and the report of Unesco Planning Mission ∠ see abstract no. A40 ⁄. The report deals separately with the problems at the following levels: 1) primary; 2) middle; 3) high and higher secondary; 4) teacher training, secondary; and 5) teacher training, elementary. The last two chapters deal with laboratory, apparatus and audio-visual aids, and organization for leadership for the promotion of science education. The recommendations for each level accompany the respective chapter. The appendices give a time table showing the number of periods per week for teaching different subjects, and the recommendations of the Unesco Planning Mission.

A43 WANCHOO V N: Science education in the teacher training colleges. Vigyan Shikshak 1965, 9(3), 18-27.

Presents the results of a survey in which a sample of 84 teacher training colleges, departments of education, and education sections of arts and science colleges in 15 States participated. The following aspects were covered: 1) teaching staff and their salary structure; 2) laboratories and equipment; 3) methods of teaching; 4) syllabus; 5) examination; 6) research. The following recommendations have been made: 1) providing each college with adequate laboratory facilities and equipment to teach all disciplines of science, and also with a workshop; 2) adoption of the following curriculum: (a) compulsory subjects, e.g. foundations of education, school organization, current problems in Indian education, (b) one of the three combinations (combining content and methods), viz. physics and mathematics, biology and chemistry, physics and chemistry, (c) either astronomy or physiology (content only), (d) co-curricular and practical work; 3) reducing the number of holidays; 4) associating staff possessing science background with supervision of practice teaching in science subjects, correction of science lesson plans and science tutorials; 5) formulating objectives and methods of teaching science subjects to suit different school conditions and different ability groups in a class; 6) setting up organizations to prepare teaching materials, organize training courses for existing science teachers of training colleges, and undertake research in science education; 7) training scientists in science pedagogy, in order to be finally recruited as teacher-educators through a scheme of science education pool to be initiated by NCERT; 8) organizing a special one-year course for graduate science teachers to enable them to teach classes XI and XII; 9) starting regional colleges of education for science teachers; 10) improving the salary scales of science staff of training colleges; 11) organizing extension courses of varying durations on a continuing basis.